

UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF NEW YORK

Balallan Limited,

Plaintiff,

-vs-

Green Oasis Environmental, Inc; G.O.E. Enterprises,  
Inc.; and William D. Carraway,

Defendants.

FILED  
IN CLERK'S OFFICE  
U.S. DISTRICT COURT, E.D.N.Y.  
NOV 03 2006  
BROOKLYN OFFICE

106 5959

COMPLAINT

DEARIE, J.  
FUCHSBERG, M.J.

Plaintiff Balallan Limited, by its attorneys Cowan, Liebowitz & Latman, P.C., for its complaint against defendants Green Oasis Environmental, Inc., G.O.E. Enterprises, Inc., and William D. Carraway, alleges as follows:

NATURE OF THE CASE

1. This is a civil action for a declaration that an assignment of a European Patent from Defendant Green Oasis Environmental, Inc. to Defendant G.O.E. Enterprises, Inc. is null and void; for a declaration that Plaintiff Balallan is the owner of that European Patent; for recovery of amounts due pursuant to various promissory notes; for recovery of monies due under a guaranty of payment; and for relief against a fraudulent transfer of rights in the European Patent. Jurisdiction is conferred upon this Court on the basis of diversity of citizenship.

THE PARTIES

2. Plaintiff Balallan Limited ("Balallan") is and at all times relevant was a corporation organized and existing under the laws of the State of New York, with its principal place of business located at 32-72 37<sup>th</sup> Street, Astoria, New York 11103.

3. Upon information and belief, Defendant Green Oasis Environmental, Inc. ("Green Oasis") is and at all times relevant was a corporation organized and existing under the laws of the State of Florida, with its current principal place of business located at 113 Rendezvous Ridge, Cashier's, North Carolina 28717.

4. Upon information and belief, Defendant G.O.E. Enterprises, Inc. ("G.O.E.") is and at all times relevant was a corporation organized under the laws of the State of Florida, with its principal place of business located at 1320 South Dixie Highway, Suite 1275, Coral Gables, Florida 38145.

5. Upon information and belief, Defendant William D. Carraway (Carraway) is and at all times relevant was a resident of either the State of South Carolina, the State of North Carolina, or the State of California, and believed to be currently residing at a Residential Re-Entry Center (halfway house) with an address of Raleigh CCM, Old NC 75 Highway, Butner, North Carolina 27509.

JURISDICTION AND VENUE

6. This is an action under the Declaratory Judgment Act, 28 U.S.C. ¶2201 and 2202 for a declaration that Plaintiff Balallan is the owner of European Patent EP940463, and in all right title and interest in and to the invention set forth therein, and that a certain transfer of the

rights in European Patent Application No. 99301533.8 (now European Patent EP940463) from Defendant Green Oasis to Defendant G.O.E. is invalid, for recovery of amounts due on promissory notes and under a certain guaranty, and for fraud.

7. This Court has subject matter jurisdiction over this controversy pursuant to 28 U.S.C. ¶1332 on the basis of diversity of citizenship. Plaintiff Balallan is a citizen of the State of New York. Defendant Green Oasis is a citizen of North Carolina, Defendant G.O.E. is a citizen of Florida and Defendant Carraway is a citizen of either South Carolina, North Carolina or California.

8. The amount in controversy is in excess of \$75,000 exclusive of interests and costs, thereby satisfying the prerequisite amount in controversy set forth in 28 U.S.C. ¶1332.

9. Venue is proper in this District pursuant to 28 U.S.C. ¶1331(a)(2) because a substantial part of the events or omissions giving rise to the claim involved in this action occurred in this District.

#### **BACKGROUND FACTS**

10. Defendant Green Oasis was the assignee of an invention for "Process for Converting Waste Motor Oil to Diesel Fuel," for which a United States Patent Application was filed with the U.S. Patent & Trademark Office ("USPTO") on March 3, 1997, and which issued, on March 23, 1999, as U.S. Patent No. 5,885,444 (hereinafter, "the U.S. Patent"). A copy of the U.S. Patent is annexed as Exhibit A.

11. Defendant Green Oasis also filed, on March 2, 1999, with the European Patent Office ("EPO") a European Patent Application on the above-identified invention for "Process for

Converting Waste Motor Oil to Diesel Fuel," and said European Patent Application was assigned application no. 99301533.8 (hereinafter, "the European Application"). A copy of the European Application as published by the EPO (patent publication no. EP 0940463A2) is annexed as Exhibit B.

12. Subsequent to the issuance of the U.S. Patent and the filing of the European Application, Plaintiff Balallan loaned ("First Loan") certain monies to Defendant Green Oasis pursuant to a Demand Promissory Note dated May 25, 1999. The First Loan was secured by the assets of Defendant Green Oasis including all present and future Patents of Defendant Green Oasis.

13. Defendant Green Oasis and Plaintiff Balallan entered into a Security Agreement dated May 25, 1999. Defendant Green Oasis also executed a Demand Promissory Note, a UCC-1 financing statement, which was subsequently recorded, and an Assignment of Claim for Damages that may recoverable by Defendant Green Oasis against a third party in an unrelated action. A Guaranty of the indebtedness executed by Defendant William D. Carraway, who is presently incarcerated in federal prison, was also part of the security obtained by Plaintiff Balallan for the First Loan. Copies of the foregoing documents are annexed as Exhibit C.

14. The Security Agreement, dated May 25, 1999, granted to Plaintiff Balallan a continuing security interest in the identified collateral, which included general intangibles (as defined in the UCC -- which includes patents), monies, security and other property owned or later owned by Defendant Green Oasis, to secure the obligations of Defendant Green Oasis to Plaintiff Balallan, said obligations including those set forth in the Security Agreement dated May 25, 1999, which includes all other current and future obligations of Defendant Green Oasis to

Plaintiff Balallan. A Copy of the Security Agreement dated May 25, 1999 is annexed as Exhibit D (also included within Exhibit C).

15. The Security Agreement, dated May 25, 1999, gave Plaintiff Balallan Power of Attorney to execute any and all documents necessary to effectuate transfer of any property foreclosed upon by Plaintiff Balallan in the event of a default by Defendant Green Oasis (Security Agreement dated May 25, 1999, Exhibit D).

16. The Guarantee, dated May 25, 1999, granted to Plaintiff Balallan an unconditional and irrevocable guarantee that William D. Carraway, personally and individually, will pay to Plaintiff Balallan the indebtedness of Defendant Green Oasis, said indebtedness including all unpaid balances of obligations to Plaintiff Balallan then existing or thereafter coming into existence, all accrued and unpaid interest thereon, and other amounts identified in the Guarantee dated May 25, 1999. A Copy of the Guarantee dated May 25, 1999 is annexed as Exhibit E (also included within Exhibit C).

17. As additional collateral for the First Loan provided to Defendant Green Oasis, Defendant Green Oasis assigned, on May 26, 1999, the invention and Patent rights for the "Process for Converting Waste Motor Oil to Diesel Fuel" to Plaintiff Balallan (hereinafter, "First Patent Assignment"). A copy of the First Patent Assignment is annexed as Exhibit F.

18. The First Patent Assignment assigned, transferred and conveyed to Plaintiff Balallan, in the United States, its territories and in foreign countries, the entire right title and interest in and to the invention for a "Process for Converting Waste Motor Oil to Diesel Fuel"

and in the U.S. Patent, and any reissue, renewal, division or continuation of the U.S. Patent. (First Patent Assignment dated May 26, 1999, Exhibit F).

19. The First Patent Assignment required Defendant Green Oasis, for itself and any legal representatives, to execute any and all applications, petitions, oaths and assignments which may be necessary in order to carry into full force and effect the sale, assignment, transfer and conveyance to Plaintiff Balallan made in said Assignment (First Patent Assignment dated May 26, 1999, Exhibit F).

20. The First Patent Assignment was stated to be a continuing one and irrevocable so long as any amount is due and owing to Plaintiff Balallan pursuant to the Demand Promissory Note dated May 25, 1999, which evidenced the First Loan of \$100,000 made to Defendant Green Oasis by Plaintiff Balallan. A copy of the Demand Promissory Note is annexed as part of Exhibit C.

21. The First Patent Assignment was recorded with the USPTO on September 14, 1999. A copy of a printout from the USPTO's assignment recordation database showing the recordation, on September 14, 1999, of the First Patent Assignment (identified in the printout as "Assignment 4") is annexed as Exhibit G.

22. Plaintiff Balallan loaned additional monies to Defendant Green Oasis pursuant to an Amended & Restated Demand Promissory Note #1 ("Amended First Loan"), dated June 4, 1999, whereby the Amended First Loan in the amount of \$500,000 incorporated the above-identified First Loan. An unsigned copy of the Amended & Restated Demand Promissory Note #1, dated June 4, 1999, and an unsigned copy of document entitled "Amendment #1 to the

Demand Promissory Notes, Security Agreement, and Related Financing Documents Dated May 25, 1999 . . .,” dated June, 1999, are annexed as Exhibit H.

23. Plaintiff Balallan loaned additional monies in excess of \$100,000 to Defendant Green Oasis in or about October, 1999 (hereinafter, “Second Loan”).

24. Additional funds were loaned, on July 30, 2002, to Defendant Green Oasis by Plaintiff Balallan, and third parties Forte Communications, Inc., Marketview Financial Group, Inc., Capital Direct, Inc., Sybeq Holdings, Inc., and Patricia A. Meding, in the amounts of \$163,663.09, \$127,242.11, \$123,738.17, \$72,189.04, \$11,547.95, and \$55,815.85, respectively (hereinafter “Additional Loans”). These Additional Loans were evidenced by promissory notes, all dated July 30, 2002. The promissory notes of Forte Communications, Inc., Marketview Financial Group, Inc., Capital Direct, Inc., and Patricia A. Meding were assigned to Plaintiff Balallan on May 31, 2006. The promissory note of Sybeq Holdings, Inc. was assigned to Plaintiff Balallan on October 25, 2006. A copy of each promissory note dated July 30, 2002 is annexed as Exhibit I. A copy of each said loan assignment to Plaintiff Balallan (executed May 31, 2006, undated, and October 25, 2006) is annexed as Exhibit J. The aggregate amount of Defendant Green Oasis’ indebtedness thereunder (the “Additional Loans”) amounts to \$554,196.21.

25. Defendant Green Oasis defaulted in the payment obligations under each of the promissory notes and Plaintiff Balallan foreclosed, on July 7, 2006, at a secured party’s sale conducted by a licensed auctioneer on the security interest that Plaintiff Balallan had secured in the assets of Defendant Green Oasis, including all present and future patents of Defendant Green Oasis. Plaintiff Balallan was the sole bidder at the secured party’s sale, bidding in the amount of

\$100,000.00. Copies of a Second Patent Assignment, dated July 7, 2006, Attorney's Declaration, dated July 7, 2006, Notice of Public Sale, and Bill of Sale, dated July 7, 2006, are annexed as Exhibit K.

26. The Second Patent Assignment, dated July 7, 2006, from Defendant Green Oasis by Plaintiff Balallan as its attorney in fact, as assignor, assigned the improvements and inventions disclosed in the U.S. Patent, the European Application, and other patent applications. A copy of the Second Patent Assignment is annexed as Exhibit L (also included within Exhibit K).

27. The Second Patent Assignment was recorded with the USPTO on July 13, 2006. A copy of the Notice of Recordation of Assignment Document, evidencing the recordation of the Second Patent Assignment, is annexed as Exhibit M.

28. Upon information and belief, on or about June 19, 2006, Defendant Green Oasis in total and complete disregard to Plaintiff Balallan's right title and interest in and to the European Application, and the invention disclosed therein, fraudulently assigned the European Application to Defendant G.O.E. Enterprises, Inc. (GOE). Defendant Green Oasis, through its counsel on or about June 19, 2006, submitted the fraudulent assignment (hereinafter, the "Green Oasis Assignment") to the European Patent Office ("EPO") for recordation. Copies of the Green Oasis Assignment and Green Oasis' June 19, 2006 cover letter to the EPO are annexed as Exhibit N.

29. Unaware of the fraudulent execution and filing with the EPO of the Green Oasis Assignment, Plaintiff Balallan sent the Second Patent Assignment and other documentation (Exhibit K) to the EPO on August 10, 2006.

30. On July 21, 2006, the European Application was granted by the European Patent Office ("EPO") as European Patent EP940463 ("the European Patent"). A copy of the European Patent is annexed as Exhibit O.

31. By letter dated September 18, 2006, the EPO rejected Plaintiff Balallan's filing of the Second Patent Assignment. According to the EPO letter, since the European Patent already was granted, the EPO is no longer responsible for registration of licenses and other rights in European applications, and that matters of ownership must be addressed with the "competent national authorities." A copy of the September 18, 2006 letter from the EPO is annexed as Exhibit P.

32. Due to the submission to the EPO of the Green Oasis Assignment prior to the grant, on July 21, 2006, of the European Patent, the EPO designated GOE as the owner of record of the European Patent (Exhibit R, discussed in paragraph 35 below).

33. By letter dated September 14, 2006, European counsel acting on behalf of Plaintiff Balallan placed the EPO on notice that the submitted Green Oasis Assignment is not valid, and requested that the European Patent register be corrected to identify Plaintiff Balallan as the owner of the European Patent. The September 14, 2006 letter further emphasized the urgency of the matter in light of the fact that at least one designated European state (i.e., Greece) required the submission, prior to September 21, 2006, of a Power of Attorney signed by the

record owner of the European Patent in order for the European Patent to be ratified (i.e., enforceable) in such designated state. A copy of European counsel's September 14, 2006 letter to the EPO is annexed as Exhibit Q.

34. Although not set forth in the September 14, 2006 letter, Italy and Spain each also requires the submission, prior to November 21, 2006, of an originally executed Power of Attorney signed by the record owner of the European Patent in order for the European Patent to be ratified in such designated state.

35. The EPO responded, by letter dated September 20, 2006, to European counsel's September 14, 2006 letter and indicated, in pertinent part, that Plaintiff Balallan's request cannot be honored since Green Oasis "was not the registered applicant any more;" that "the EPO has no competence to verify the validity of any transfer agreement;" and that "[t]he assessment of the validity of a transfer agreement is subject to national laws." Accordingly, Plaintiff Balallan currently is unable to ratify the European Patent in Italy and Spain, and due to the passing of the above-indicated September 21, 2006 deadline (see paragraph 33), was and remains unable to ratify the European Patent in Greece. A copy of the EPO letter dated September 20, 2006 is annexed as Exhibit R.

**COUNT I**

**Declaration that the Green Oasis Assignment of  
European Patent 99301533.8 is Null and Void**

36. Plaintiff repeats and realleges the allegations contained in paragraphs 1 through 35 of this complaint as though fully set forth herein.

37. By virtue of the First Patent Assignment dated May 26, 1999 (Exhibit F annexed), Plaintiff Balallan acquired, as collateral for the First Loan provided to Defendant Green Oasis pursuant to the promissory note dated May 25, 1999 and as amended by the Amended & Restated Demand Promissory Note #1 ("Amended First Loan") dated June 4, 1999, in the United States and in foreign territories including Europe, all right, title and interest in the U.S. Patent and the European Application, now the European Patent.

38. The First Patent Assignment has never been revoked and the Demand Promissory Note dated May 25, 1999 has never been paid despite due demand thereof for payment.

39. Plaintiff Balallan has asserted ownership in the U.S. Patent and the European Patent and the invention therein and by this Complaint has asserted that Defendant Green Oasis is not the owner of the European Patent and that the Green Oasis Assignment of the European Application is in breach of the First Patent Assignment dated May 25, 1999 and therefore null and void; consequently a justiciable controversy exists between Plaintiff Balallan and Defendants Green Oasis and GOE.

**COUNT II**

**Declaration That Plaintiff Balallan is the Owner of  
European Patent 99301533.8 and the Invention Therein**

40. Plaintiff repeats and realleges the allegations contained in paragraphs 36 through 39 of this complaint as though fully set forth herein.

41. By virtue of the First Patent Assignment dated May 26, 1999 (Exhibit F) and the Second Patent Assignment dated July 27, 2006 (Exhibit L), and the recording of both the First and Second Patent Assignments in the U.S. Patent & Trademark Office (Exhibits G and M),

Plaintiff Balallan has asserted ownership of the U.S. Patent and the invention therein, in the European Patent and the invention therein, that Defendant Green Oasis is not the owner of European Patent, and that the Green Oasis Assignment is in violation of the First Patent Assignment and Second Patent Assignment, and therefore null and void; consequently a justiciable controversy exists between Plaintiff Balallan and Defendants Green Oasis and GOE.

**COUNT III**

**Recovery of Amounts Due Pursuant to May and June 1999 Demand Promissory Notes  
("Amended First Loan")**

42. Plaintiff repeats and realleges that allegations contained in paragraphs 40 through 41 of this complaint as if though fully set forth herein.

43. On May 25, 1999, Plaintiff Balallan lent to Defendant Green Oasis \$100,000 on Demand ("The First Loan"), which First Loan subsequently was amended pursuant to and incorporated into the Amended & Restated Demand Promissory Note #1 ("Amended First Loan"), dated June 4, 1999, whereby the Amended First Loan was in the amount of \$500,000 (inclusive of the \$100,000 of the First Loan).

44. At the time the First Loan was made, and as amended (Amended First Loan), Defendant Green Oasis executed and delivered to Plaintiff Balallan a Demand Promissory Note, dated May 25, 1999, in the amount of \$100,000, and subsequently delivered to Plaintiff Balallan an Amended & Restated Demand Promissory Note #1, dated June 4, 1999, in the amount of \$500,000 (inclusive of the \$100,000 of the First Loan).

45. The Defendant Green Oasis failed to repay the Amended First Loan despite due demand thereof made of Defendant Green Oasis.

46. Plaintiff Balallan is still the owner and holder of the above-identified notes.

47. As a result of Defendant Green Oasis' non-payment of the sum of \$500,000 lent to Defendant Green Oasis on June 4, 1999, Defendant Green Oasis owes Plaintiff Balallan the sum of \$500,000, plus accrued interest thereon.

**COUNT IV**

**Recovery of Amounts due pursuant to the "Second Loan"**

48. Plaintiff repeats and realleges that allegations contained in paragraphs 42 through 47 of this complaint as if though fully set forth herein.

49. Plaintiff Balallan loaned additional monies in excess of \$100,000 to Defendant Green Oasis in or about October, 1999 ("Second Loan").

50. The Defendant Green Oasis failed to repay the Second Loan despite due demand thereof made of Defendant Green Oasis.

51. As a result of Defendant Green Oasis' non-payment of the Second Loan, Defendant Green Oasis owes Plaintiff Balallan an amount to be determined.

**COUNT V**

**Recovery of Additional Monies Lent to Defendant Green Oasis Pursuant to 2002 Demand Promissory Notes ("Additional Loans")**

52. Plaintiff repeats and realleges the allegations contained in paragraphs 48 through 51 of this complaint as though fully set forth herein.

53. Defendant Green Oasis was lent additional monies by Plaintiff Balallan and third parties Forte Communications, Inc., Marketview Financial Group, Inc., Capital Direct, Inc., Sybeq Holdings, Inc., and Patricia A. Meding (the "Additional Loans"), which Additional Loans were evidenced by Demand Promissory Notes all dated July 30, 2002.

54. The promissory notes and amounts due thereunder were assigned from Forte Communications, Inc., Marketview Financial Group, Inc., Capital Direct, Inc., and Patricia A. Meding to Plaintiff Balallan on May 31, 2006. The promissory note of Sybeq Holdings, Inc. was assigned to Plaintiff Balallan on October 25, 2006.

55. Defendant Green Oasis has failed to make any payments due under the 2002 promissory notes ("Additional Loans"), despite due demand thereof, and as a result thereof Plaintiff Balallan has incurred damages of \$554,196.21, plus accrued interest thereon.

**COUNT VI**

**Recovery of Monies Due Under Guaranty of Payment**

56. Plaintiff repeats and realleges the allegation contained in paragraphs 52 through 55 of this complaint as though fully set forth herein.

57. On May 25, 1999, Defendant Carraway made and executed a guaranty for the benefit of Plaintiff Balallan, whereby in consideration for Plaintiff lending \$100,000 to Defendant Green Oasis (the First Loan), Defendant Carraway guaranteed payment of the First Loan and all future payment obligations of Defendant Green Oasis to Plaintiff Balallan.

58. The Defendant Carraway was notified and made aware of Defendant Green Oasis' default on the above identified promissory notes.

59. There is now due and owing to Plaintiff Balallan from defendant Carraway the sums of \$500,000 for the "Amended First Loan", \$554,196.21 for the "Additional Loans", and an amount to be determined for the "Second Loan", plus accrued interest thereon.

**COUNT VII**

**Fraudulent Transfer of Rights in European Patent**

60. Plaintiff repeats and realleges the allegation contained in paragraphs 56 through 59 of this complaint as though fully set forth herein.

61. On May 25, 1999, Plaintiff Balallan obtained from Defendant Green Oasis a security interest in all property, including future property, of Defendant Green Oasis (Security Agreement, Exhibit D). On May 26, 1999, Plaintiff Balallan obtained from Defendant Green Oasis an assignment of all right, title and interest, in the United States and in foreign territories, of all right, title and interest in the U.S. Patent, and the invention therein. The European Patent embodies the invention set forth in the U.S. Patent.

62. Upon information and belief, third party individual Charles McLaughlin incorporated Defendant GOE on or about July 11, 2005, and third party individual Robert J. Van

Der Wall was and remains Defendant GOE's corporate counsel and duly designated Registered Agent. A copy of Defendant GOE's Articles of Incorporation filed with the State of Florida on July 19, 2006, showing Charles McLaughlin as Incorporator and Robert J. Van Der Wall as Registered Agent, is annexed as Exhibit S. A copy of a computer printout from the online database of the Florida Department of State, Division of Corporations, showing Robert J. Van Der Wall, with an address of 1320 South Dixie Highway, Gables One Tower, Penthouse Suite 1275, Coral Gables, Florida 33146, as Registered Agent of Defendant GOE, is annexed as Exhibit T.

63. Upon information and belief, Charles McLaughlin was also the Assistant Secretary of Defendant Green Oasis, at least as of June 19, 2006, when Defendant Green Oasis fraudulently assigned the European Application (now European Patent) to Defendant GOE. Charles McLaughlin executed the Green Oasis Assignment on behalf of Defendant Green Oasis, and a letter dated July 21, 2006, submitted to the EPO by European counsel for Defendants Green Oasis and GOE, identified the signatory for the assignor, Defendant Green Oasis, as Charles McLaughlin. The July 21, 2006 letter further identified Charles McLaughlin's title as Assistant Secretary of Defendant Green Oasis. A copy of said July 21, 2006 letter is annexed as Exhibit U.

64. Upon information and belief, Robert J. Van Der Wall, Defendant GOE's corporate counsel and duly designated Registered Agent, also served and continues to serve as Defendant Green Oasis' corporate counsel and duly designated Registered Agent. A copy of a computer printout from the online database of the Florida Department of State, Division of Corporations, showing Robert J. Van Der Wall, with an address of 1320 South Dixie Highway,

Suite 1275, Coral Gables, Florida 33145, as Registered Agent of Defendant Green Oasis, is annexed as Exhibit V.

65. Upon information and belief, and in view of the foregoing, the Green Oasis Assignment of the European Application (now European Patent) was without consideration and the assignee, Defendant GOE, was not a bona fide purchaser without knowledge of Plaintiff Balallan's ownership interest in the European Patent.

66. The assignment of the European Application (now European Patent) by Defendant Green Oasis to Defendant GOE constituted a fraud on Plaintiff Balallan in light of Plaintiff Balallan's interest in the European Patent and Defendants Green Oasis' and GOE's knowledge of such ownership interest.

67. Defendants Green Oasis and GOE acted in conspiracy to defraud Plaintiff Balallan, and Plaintiff Balallan has been damaged as a result thereof.

**Wherefore**, Plaintiff Balallan demands judgment:

- (i) adjudging that Defendant Green Oasis' assignment of European Patent 99301533.8 is null and void;
- (ii) adjudging that Plaintiff Balallan is the owner of European Patent 99301533.8 and the invention therein;
- (iii) granting Plaintiff Balallan recovery of damages against Defendant Green Oasis of \$500,000, plus accrued interest thereon, on Plaintiff Balallan's third claim (Count III);

- (iv) granting Plaintiff Balallan recovery of damages against Defendant Green Oasis in an amount to be determined, plus accrued interest thereon, on Plaintiff Balallan's fourth claim (Count IV);
- (v) granting Plaintiff Balallan recovery of damages against Defendant Green Oasis of \$554,196.21, plus accrued interest thereon, on Plaintiff Balallan's fifth claim (Count V);
- (vi) granting Plaintiff Balallan recovery of damages against Defendant Carraway of at least \$1,054,196.21, plus accrued interest thereon, on Plaintiff Balallan's sixth claim (Count VI);
- (vii) granting Plaintiff Balallan recovery of damages against defendants Green Oasis and GOE on Plaintiff Balallan's seventh claim (Count VII) in an amount to be determined at a trial of this action;
- (viii) enjoining the Defendants Green Oasis and GOE from taking further actions in violation of Plaintiff Balallan's right, title and interest in European Patent 99301533.8 and the invention therein;
- (ix) directing Defendants Green Oasis and GOE to execute all appropriate assignments and documents to reflect Plaintiff Balallan's ownership of European Patent 99301533.8; and

(x) awarding Plaintiff Balallan interest on damages awarded, the costs of this action, its reasonable attorneys fees, and such other and further relief as the Court deems just and proper.

Dated: New York, New York  
November 3, 2006

Cowan, Liebowitz & Latman, P.C.  
Attorneys for Plaintiff Balallan

By



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**United States Patent** [19]  
**Wansbrough et al.**

[11] **Patent Number:** **5,885,444**  
[45] **Date of Patent:** **Mar. 23, 1999**

[54] **PROCESS FOR CONVERTING WASTE MOTOR OIL TO DIESEL FUEL**

[75] **Inventors:** Robert W. Wansbrough; Calvin E. Moore, Jr., both of Houston, Tex.; William D. Carraway, Pawleys Island, S.C.

[73] **Assignee:** Green Oasis Environmental, Inc., Charleston, S.C.

[21] **Appl. No.:** 809,000

[22] **Filed:** Mar. 3, 1997

**Related U.S. Application Data**

[63] Continuation of Ser. No. 530,069, Sep. 19, 1995, abandoned, which is a continuation of Ser. No. 248,738, May 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 977,627, Nov. 17, 1992, abandoned.

[51] **Int. Cl.:** C10M 175/02; C10G 9/14

[52] **U.S. Cl.:** 208/179; 208/67; 208/100; 208/131; 208/184; 208/106

[58] **Field of Search:** 208/184, 67, 179, 208/97, 100, 131, 106

[56] **References Cited**

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9098426	8/1990	WIPO	.
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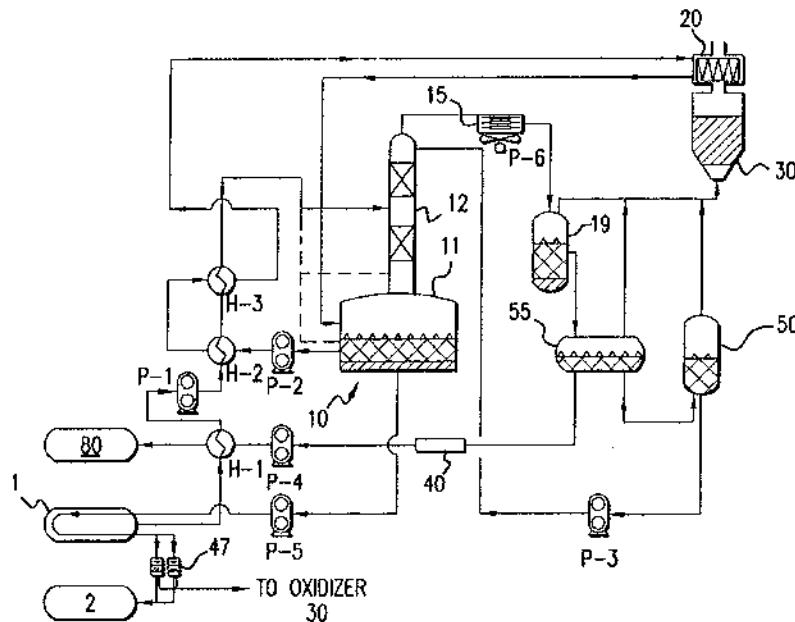
Speight, James G., *The Chemistry and Technology of Petroleum*, Marcel Dekker Inc. New York (1990), pp. 529-544.

**Primary Examiner—**Bekir L Yildirim  
**Attorney, Agent, or Firm—**Oliff & Berridge, PLC

[57] **ABSTRACT**

A process for thermally cracking waste motor oil into a diesel fuel product is provided. The thermal cracking process uses low temperature cracking temperatures from 625° F. to 725° F. with ambient pressure to generate a column distilled fraction of diesel fuel mixed with light ends, the light ends being flashed off to produce a high quality #2 diesel fuel. The process further provides for removal from the cracking vessel an additional product stream which, when filtered, is suitable for use as a #3 fuel oil and that can be further blended with a bunker oil to yield a #5 fuel product.

16 Claims, 4 Drawing Sheets



U.S. Patent

Mar. 23, 1999

Sheet 1 of 4

5,885,444

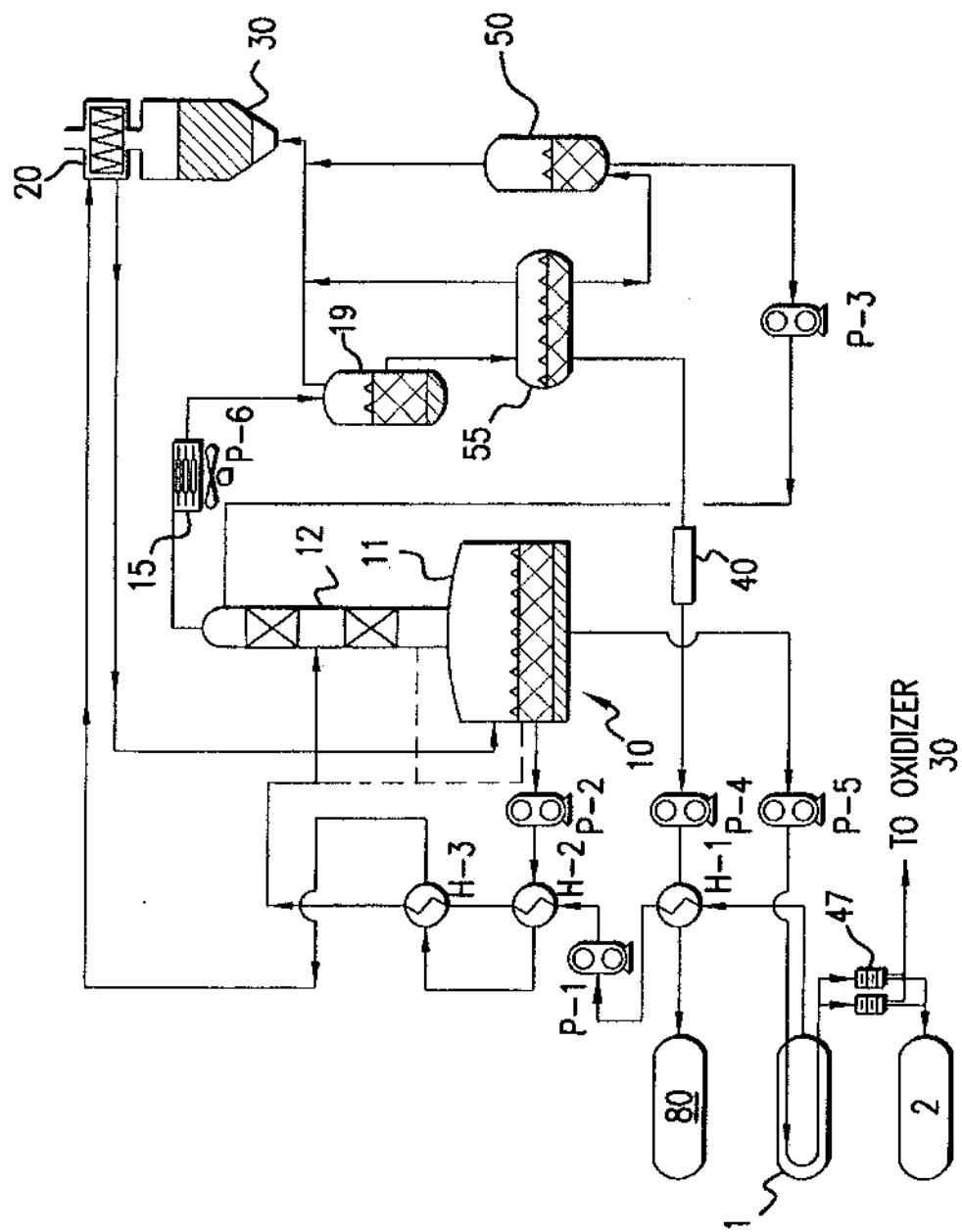


FIG. 1

U.S. Patent

Mar. 23, 1999

Sheet 2 of 4

5,885,444

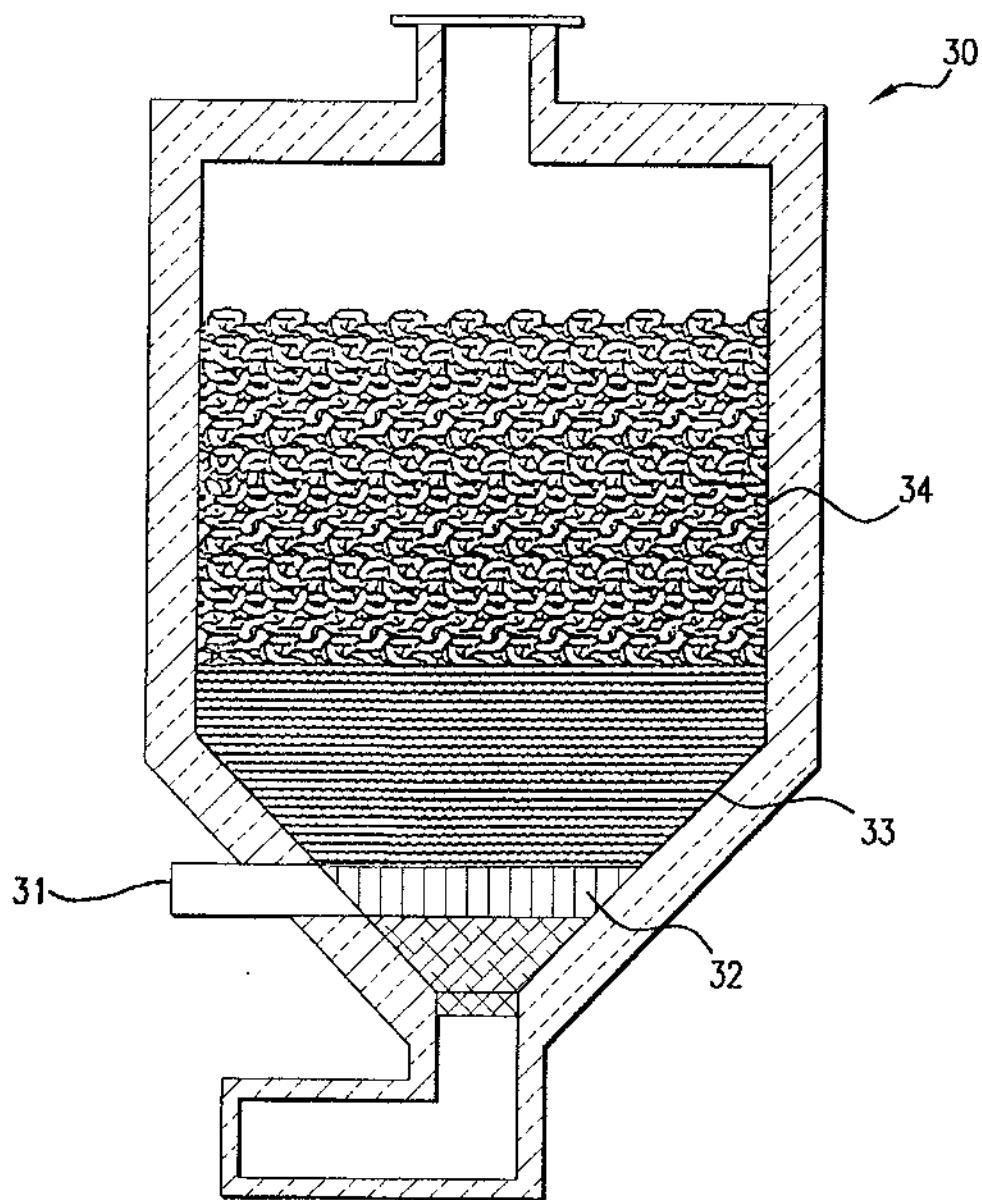


FIG.2

U.S. Patent

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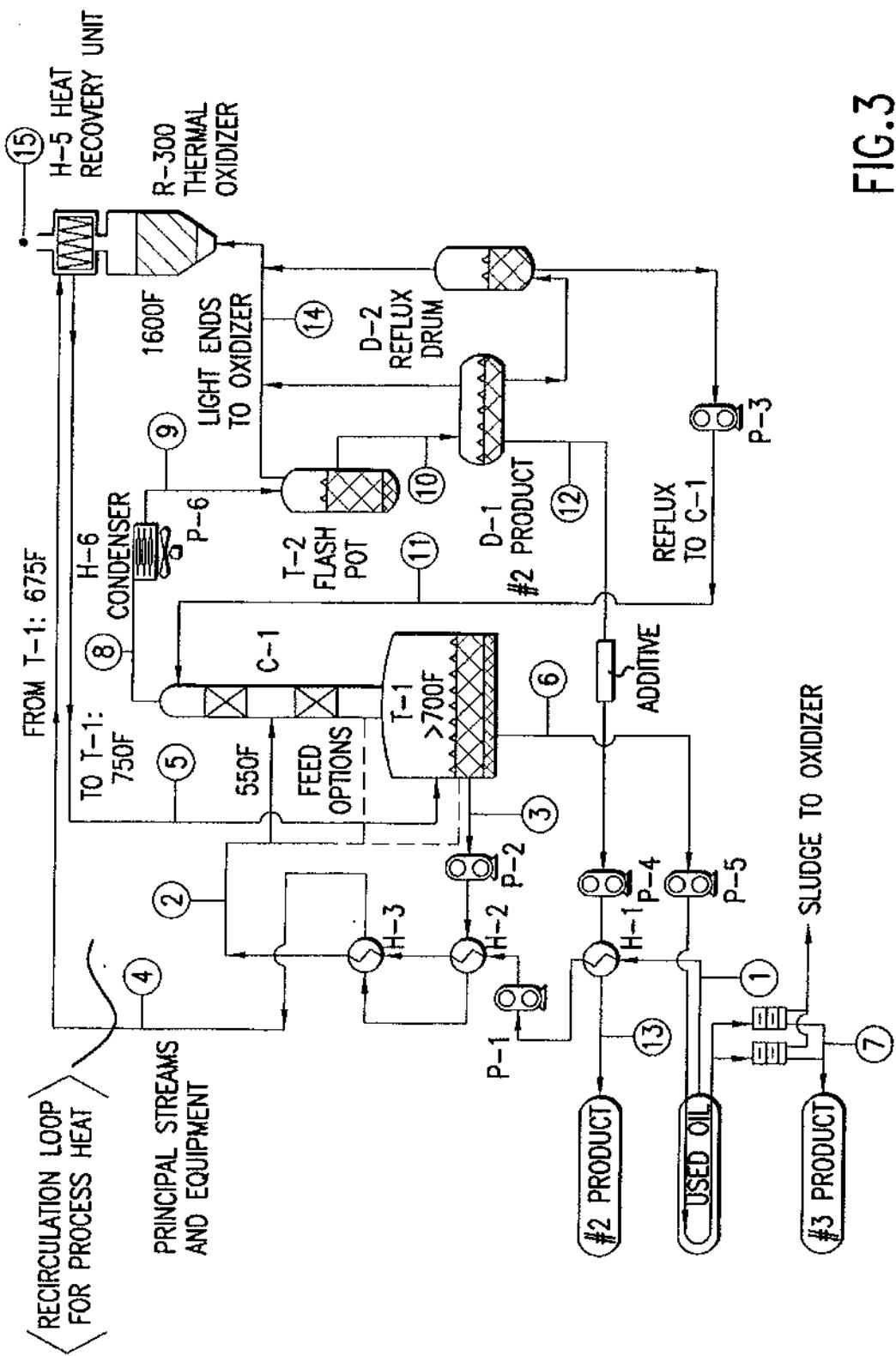


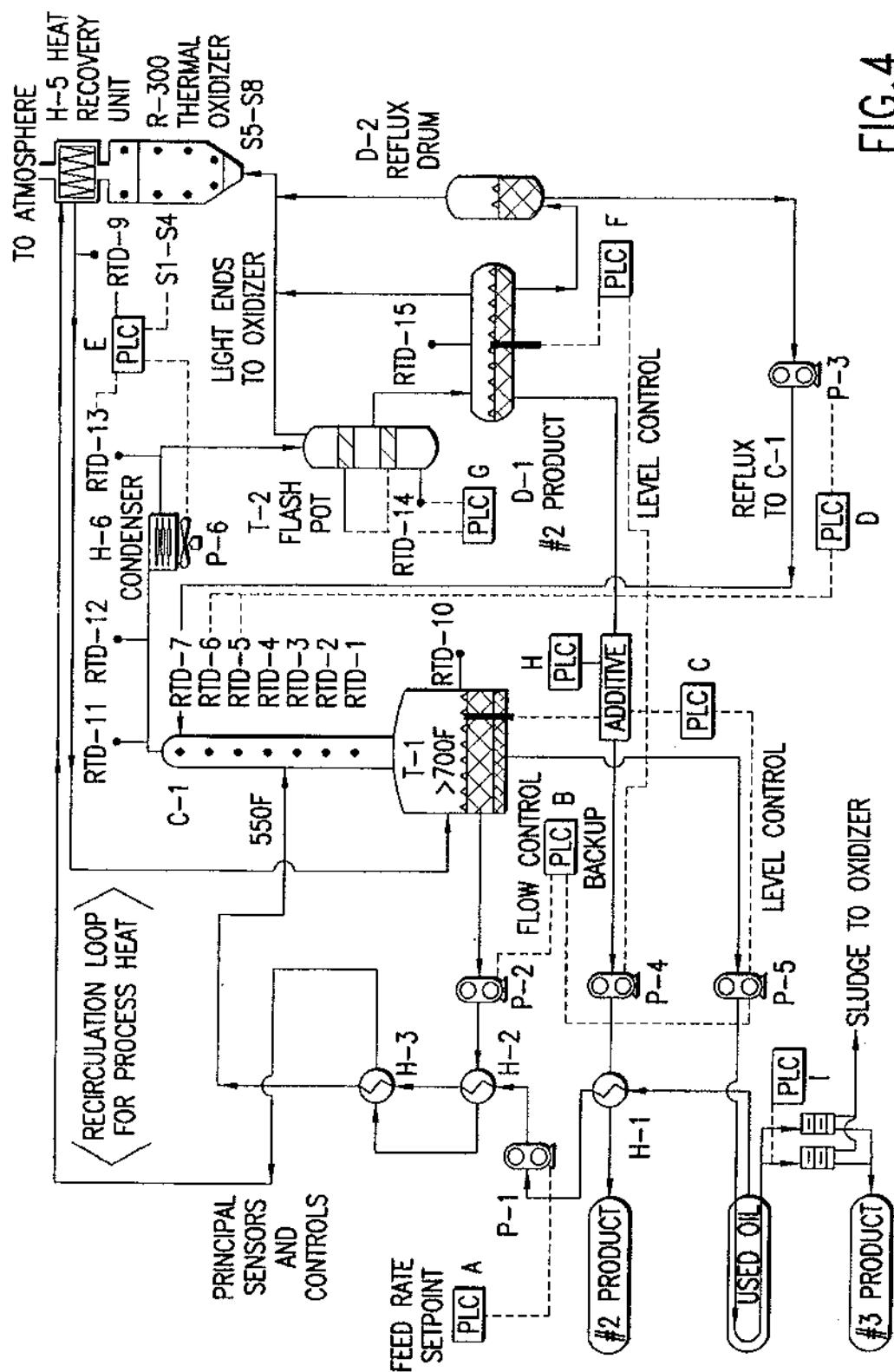
FIG. 3

U.S. Patent

Mar. 23, 1999

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5,885,444



5,885,444

**1**  
**PROCESS FOR CONVERTING WASTE  
MOTOR OIL TO DIESEL FUEL**

**RELATED APPLICATIONS**

This application is a continuation of application Ser. No. 08/530,069, filed Sep. 19, 1995, now abandoned, which in turn is a continuation of application Ser. No. 08/248,738 filed May 25, 1994, now abandoned, which in turn is a continuation-in-part of application No. 07/977,627 filed Nov. 17, 1992, now abandoned.

**BACKGROUND OF THE INVENTION**

This invention is directed towards the art of converting used motor oil to a useable fuel source.

Currently, the market for used motor oil has stymied many recycling and reclamation efforts. The market for used motor oil has largely been geared to limited processing steps which convert the used motor oil into a low quality fuel such as bunker oil (#6 fuel oil). Alternatively, a limited amount of used motor oil is reclaimed and converted into a recycled motor oil product.

Used motor oil retains a high energy potential. However, hazards and cost associated with collecting, storing, transporting, and general handling of used motor oil has limited the efforts to collect used motor oil for disposal or recycling. Although the prior art provides limited processing of used motor oil for other petroleum products, there remains a need for improvement within the art of converting used motor oil to a high quality energy source.

**OBJECTS OF THE INVENTION**

It is thus an object of this invention to provide a process for converting used motor oil into a diesel fuel product.

It is a further object of this invention to provide an apparatus and process for the low temperature, ambient pressure cracking of used motor oil into a diesel product.

It is yet another object of this invention to provide for mobile equipment which can be used for processing used motor oil to a diesel fuel product.

It is yet another object of this invention to provide for a process where the conversion of used motor oil to a diesel fuel product which complies with environmental regulations.

These, as well as other objects of this invention, are provided by a process including: [providing a cracking apparatus, the apparatus comprising a cracking vessel, the vessel in communication with a heating means for heating the used oil, a distillation column in communication with the vessel, and a condenser in communication with the distillation column; supplying the cracking vessel with a source of used motor oil; heating the used motor oil to a cracking temperature; cracking the used motor oil to a mixture of lighter molecular weight compounds; separating the lighter molecular weight compounds into a first mixture of a small fraction of volatile light ends and a second mixture of diesel fuel; collecting the second mixture of diesel fuel.]

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a schematic of the process and apparatus envisioned to carry out the process.

FIG. 2 is a sectional view of a thermal oxidizer in accordance with this invention.

FIG. 3 is an additional schematic of sensor locations and controls with optional flow patterns indicated by dashed lines.

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FIG. 4 is an additional schematic of the process showing streams of material flow in conjunction with Table 3.

**DETAILED DESCRIPTION**

**Process**

In accordance with this invention, it has been found that waste oil from internal combustion engines can be cracked under low temperature, low severity conditions to yield #2 grade diesel fuel and a #3 fuel which can be further blended into a #5 fuel. This process occurs at much lower temperatures than was conventionally thought to be possible and permits the continuous flow processing of waste oil to a #2 grade diesel fuel without coking or fouling of the cracking apparatus.

The system and its operation is schematically shown in the process flow diagram of FIG. 1.

Used oil feedstock is stored in holding tank 1. The used motor oil feedstock contains a mixture of paraffins, naphthenes, aromatics, and olefins with 30% of this waste oil already within a molecular weight range for a diesel product.

The process and system accepts entrained water contents of 2%-5% and has been tested with used oil feedstocks having a water content as high as 7%. However, entrained water will be converted to vapor in this system, with consequent absorption of heat. This will somewhat reduce the efficiency of the thermal oxidizer 30 to be described later, requiring more supplemental fuel input to the system to maintain process temperatures and reduce the final product yield accordingly. Finally, metal particles and shavings from engine wear are usually suspended in the waste oil. These metal particles are typically in the micron and submicron range and are sufficiently small such that they pass through standard oil filters. One skilled in the art would have thought

that these metal particles would have been detrimental to the cracking employed in the instant process because the particles would have raised the temperature needed for thermal cracking, thereby increasing the energy costs associated with the cracking process. Accordingly, one skilled in the art probably would have been of the opinion that it would not have been possible to efficiently and economically crack waste motor oil containing metal particles. However, as the results shown herein indicates Applicants have found that that is not the case.

The used oil feedstock is pre-heated first, while in the holding tank 1 by the #3 product stream on its way to a storage tank 2 and then, in a series of three heat exchangers (H-1, H-2, H-3), until it reaches a temperature of about 500° F. before entering the reaction and distillation assembly 10.

By exchanging heat, especially from the exiting #3 stream to the used oil feedstock stream, the overall energy requirements of the system is greatly reduced. Finally, pump P-1 controls the rate of feed into the system of the used oil feedstock.

The pre-heated used oil feedstock is fed to a reaction and distillation 10 assembly comprising a cracking vessel (still pot) 11 and a distillation column 12. The cracking vessel 11 can vary in size and volume. The cracking vessel 11 typically has an operating or cracking temperature of between about 625°-700° F. which is maintained by a heat recovery unit 20 which is preferably powered by a thermal oxidizer 30.

Although the cracking temperature can be raised to give a higher cracking rate, this would also increase the light end production. However, that is just the opposite of the desired result. The key to the present invention is to operate at as low a cracking temperature as possible to minimize light end

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production and avoid coking problems. While it is difficult to analyze cracking reactions, it has been found that it is possible to carry out the thermal cracking such that only a small percentage of light ends are being produced relative to #2 diesel fuel product. Therefore, it is inferred that under the mild conditions employed, cracking products which constitute #2 diesel fuel product can be economically obtained. A portion of the waste oil is extracted from the vessel 11 by pump P-2 and circulated through a recirculating loop containing heat recovery unit 20 and which heats the extracted oil to 700° F. producing a mixed vapor/liquid product which is then returned to the vessel 11 to maintain the vessel 11 at the proper process temperature.

The distillation column 12 is an insulated cylinder 14 feet in height with interior diameters of 10, 18, or 24 inches depending upon the model. The column 12 is filled with standard packing material known as nutter rings. Exotic column packing materials or any type of catalyst based cracking systems would be quickly poisoned by the diverse metals and other compounds found in waste oil and, therefore, are not preferred.

With proper temperature control, all of the lower molecular weight material fractions whose boiling point is that of #2 diesel or less, e.g., #2 diesel, light ends, (which may include up to 200 separate components) and volatile products leave the top of the column 12 as vapors. Gases leaving the top of the column 12 pass through an air-cooled tube-type condenser 15, where the temperature is reduced by approximately 350° F. to a temperature of around 250° F., collecting mostly as liquid in the light ends flash vessel 19.

It has been found that coke formation, a common problem in petroleum cracking, is not occurring on the cracking equipment used in the present process. While coke formation is a poorly understood phenomena, it is believed that the low temperatures employed to crack the waste oil are sufficiently mild that coking is avoided. Further, removal of the #3 fuel stream from the cracking vessel is believed to be beneficial in preventing the formation of coke.

It may also be that any coke formation which may be occurring, is being selectively deposited upon the suspended metal particles. If so, then the metal/coke particles are removed as part of the #3 fuel stream withdrawal process. This slurry can be used following filtration as a #3 fuel oil source. In addition, the #3 fuel oil can be blended with a bunker oil to produce a #5 fuel oil.

Both the #2 diesel fuel stream and the #3 fuel oil stream can use a stainless steel ultra filtration apparatus from DuPont Separation Systems, Inc., Seneca, S.C., which consist of a series of increasingly fine matrices to trap particles of smaller and smaller size as the fuel streams are withdrawn. Each of the respective fuel outlet streams has two pump and filter assemblies arranged in series for a total of four filtering apparatuses. The duplex or in series positioning of the filter units enables the continuous flow of the fuel streams even during maintenance and replacement of a single filter unit. The filter placement described above has been found to remove 99.90% of the particles present in untreated used oil, the bulk of the particles being between 1 to 2.5 microns in size.

It has been found that after approximately 50,000 gallons of product has been passed through the filter assemblies, the filter units should be given routine maintenance. Ideally, the filtration media is removed from the filter housing, the media and entrapped particles dried to a powder with the resulting gases added to the fuel input of the oxidizer while substantially removing all the volatile organic compounds present in

the gases. Once dried, the media and entrapped particles can be disposed of, as verified by TCLP test results showing that the heavy metals are well below the maximum allowed for solid disposal.

If desired, additional filtration can be provided by a granular alumina silicate available from Pure-Flow Product Group, Newman, Ga., which is widely used in the industry to cleanse petroleum products.

The flash vessel 19 is fitted with two electric band heaters (not shown) and will lower the flash point of the product and flash off the light ends including a light naphtha product and any water vapor. The light ends and light naphtha product are then used as fuel input to the thermal oxidizer 30. Alternatively, the #2 diesel fuel can be reheated and passed through another flash pot or a vapor separator where the more volatile light ends are separated and collected. The remaining liquid, #2 diesel fuel, is transferred to the product tank 55. From there, the #2 diesel fuel leaves as the final product with some condensed liquids going to a reflux drum 50 and used to keep the temperature at the top of distillation column 12 somewhat cooler than that of the vessel 11. The rate of reflux, from the reflux drum 50 to the column 12, is controlled by pump P-3. This rate is quite important. The vapor/liquid contact between reflux and hot vapors helps the cracking reaction proceed. The reflux is fed into the distillation column 12 at a location 18 inches below the top of the column. A distribution plate (not shown) which is present in the column helps distribute the reflux evenly over the column. However, since the reflux requires energy to bring the reflux back up to temperature, the goal is to provide only sufficient reflux to maximize the desired products. Excessive amount of reflux lowers the profits of the overall operating system. A reflux ratio of 0.7-1:1 has been found useful in the above process.

As an example, extremes of a simulation study using kerosene range from a reflux ratio of 3.9 which required a BTU input of (1,199,970) one million, one hundred and ninety nine thousand, nine hundred and seventy BTUs per hour which gave a projected product ratio of 8.5743 of number 2 diesel fuel/16.5817 number 3 diesel fuel. When the reflux ratio is raised to 7.6, the BTU requirement is (4,146,830) four million, one hundred forty six thousand, eight hundred and thirty BTUs per hour giving a product ratio of 13.8681 for number 2 diesel fuel/7.6403 to number 3 fuel oil. The simulation figures above, while based upon a kerosene product, demonstrate that the reflux rate can drastically effect not only the energy input requirements in the cracking process, but can affect the overall ratio of the diesel fuel product to the heavier fuel oil product.

Heavier components such as polymer oil, other cracking products with higher boiling points and solid wastes collect in the bottom of vessel 11 and are removed and sent through a filtration system 47 to remove residue, water and metal particles by pump P-5 as #3 fuel product. It has been found that a twenty five percent withdrawal for the #3 fuel product in relation to the amount of introduced feed stock is desirable. At this level of withdrawal, the overall energy input requirements and production rates for the #2 diesel fuel products are achieved in an economical fashion. However, the withdrawal rate could be raised or lowered depending on variables in feed stock quality as well as the desired quantities of the various fuel streams. The #3 fuel product can be used directly as a fuel oil or can be blended with #6 bunker fuel to produce a marketable #5 fuel. The #3 stream is pumped through a filtration system 47 under pressure to remove residue, water and metal particles.

The thermal oxidizer 30 takes the place of the usual reboiler. As described above, the recirculation loop between

vessel 11 and heat recovery unit 20 includes two (H2, H3) of the three heat exchangers present. Accordingly, heat from the recirculation loop also pre-heats the used oil feedstock, the other heat exchanger H-1, exchanges heat from the #2 diesel final product line to the incoming used oil feedstock. The rate of recirculation through this recirculation loop is controlled by pump P-2 and the amount of heat added is a function of the fuel air flow rate to the thermal oxidizer 30.

The thermal oxidizer 30 is manufactured by Green Oasis under license from its designer, Thermatrix, Inc., of San Jose, Calif. and is shown schematically in FIG. 2. The fuel/air mixture, containing the light ends and some reflux, enters the unit at the inlet point 31 and then passes through the distribution plenum 32, where it is evenly directed into a two part 33, 34 inert ceramic matrix above. Any vapors from product tank 55 or reflux drum 50 are added to the light ends burned off in flash vessel 19 as fuel input to the thermal oxidizer 30. The first zone 33 of the matrix provides thorough mixing of oxygen and fuel.

The reaction zone 34 is pre-heated at start-up, and operates at temperatures on the order of about 1,600° F. As the vapor mixture passes into the reaction zone 34, the vapor mixture heats up to its oxidation temperature, where it completely oxidizes. Because the geometry of the inert ceramic matrix 33, 34 inhibits flame propagation, oxidation and release of heat occur in a flameless process.

The heat produced by the oxidizer is used to raise the temperature of the pre-heated feedstock to its final reaction temperature of 625°-700° F. through the heat recovery unit 20. While a slight inherent pressure may exist at the bottom of column 12 by the cracking reactions, this is still within what one skilled in the art would call atmospheric distillation.

Thermal oxidizer technology offers a number of important state of the art technological advantages as well as environmental and regulatory advantages. For example, the oxidation process converts hydrocarbons to water and carbon dioxide with a destruction/removal efficiency (DRE) of at least 99.99%. By contrast, other systems have 99% DRE. This 0.99% difference represents a release of 100 times more volatile organic compounds (VOC's) into the atmosphere. Depending upon applicable law, the levels of efficiency achieved with flameless operation may exempt the system from boiler permit requirements and may qualify it for minor source exemptions. Furthermore, another advantage of the thermal oxidizer 30 is the near-100% oxidation of input fuels. This increases the amount of heat available for use in the process, reducing the amount of required fuel supplement and improving final product yield. The thermal oxidizer is also much safer than prior art alternatives. It is flameless, with anti-flashback protection, and operates below the lower explosive limit (LEL), qualifying the system for operation in hazardous areas. The thermal oxidation process is also far more easily controlled than a flame-based boiler because it may be operated over a wider range of fuel rates and is more tolerant of minor variations in fuel rates during operation.

Finally, before the #2 diesel enters storage tank 80, chemical additives from a source 40 may be added to stabilize the #2 diesel product by preventing the formation of reactive molecules such as diolefins which can add an objectionable color to the #2 diesel product. Furthermore, #2 diesel fuel product will often darken over time due to the presence of reactive olefins within the fuel. To prevent this discoloration, well known fuel stabilizers such as Stabil-AD 5300 oil additive, produced by Malco Chemical Company of

Naperville, Ill., have been found to stabilize the olefins when added according to the manufacturers directions to the #2 product.

The thermal cracking process described produces a #2 diesel fuel suitable for non-highway use. Further, the process is compatible with a wide range of waste oil feed stock. While highly uniform feed stock sources, such as those from an oil recovery system for fleet vehicles, are ideal for processing, there is a vast supply of used motor oil which varies as to content and source. For example, specialty lube shops and service stations represent a feed stock source of extreme variation in oil types in terms of viscosity, gas/diesel ratings, anti-oxidant content, detergent additives and the presence of synthetic oils. Further, community collection sites for used oil often contained other petroleum products such as greases, gear oils and other types of lubricating oils.

In accordance with this invention, it has been found that the present process is fully compatible with a wide and diverse range of waste oil starting material. The preferred process uses a pump to periodically inject preheated waste oil into the cracking vessel. Likewise, an additional pump is used to periodically withdraw materials from the bottom of the cracking vessel. As a result, of the near continuous flow of material into and from cracking vessel, there is constant variation in the makeup of the material which is contained in the cracking vessel.

Preferably, the cracking process is carried out at a pre-selected temperature and reflux rate. It has been observed that at any one instance, the collected product from the distillation column may not meet the specifications for the #2 diesel fuel. However, such short term fluctuations are transient and the aggregate distillation product will meet the requirements for #2 diesel fuel.

The process and equipment described above are able to be carried within and are supported by a conventional tractor trailer compartment which assist in the initial shipping of the equipment to an appropriate recycling site. The ability to provide a cracking process and equipment that can be supported and housed by a relatively small structure offers an advantage in that processing sites can be easily erected at numerous waste oil collection facilities. Prior art petroleum cracking processes and apparatus have been of such a large scale and size that enormous capital expenditures are required for conventional petroleum cracking facilities. Such facilities require transport of the material to be cracked to the processing site. The much smaller scale of the applicant's process and applicant's ability to process waste oil directly into a diesel fuel product enables numerous processing sites to be set up locally, avoiding the need for the handling and transport of large quantities of waste oil to one central processing facility.

#### EXAMPLE ONE

During late 1993 and early 1994, a series of operational tests and material balance analyses were conducted using a test unit installed at applicant's facilities.

As indicated in Table 1A, the diesel product (GOE #2) has a sufficiently high flash point, cetane rating, and distillation profile to meet federal standards for #2 diesel fuel. Test summaries and compilation of data results are summarized in Table 1A along with fuel grade industry standards. It should be noted that the figures set forth for the standard fuel products are minimum standards and minimum ranges to be classified as the respective grade of fuel oil. In many instances, the diesel product produced, GOE #2 and GOE #3 will surpass the standards and requirements for the standard fuel oil grades as are followed by the industry.

It should be noted that the normal sulfur content is below the 1993 EPA standard of 0.5% but above the new (1994) standard of 0.05% for "over-the-road" fuel use. The #2 diesel fuel is therefore dyed dark blue, as required by law, to identify off-road fuels sold for agricultural, marine and industrial applications, as to which the new standard does not apply. It is believed that an additional additive or treatment may be possible that will bind the sulfur molecules to create larger particles. These larger molecules could then be removed in the filtration system, bringing sulfur content below the more restrictive limit and permitting on-road use. Note: As seen in Table 1B, there is a natural volumetric expansion during processing of between 0 and 8%. This is because of the different densities of the starting material, used oil, and the less dense products of #2 and #3 fuels, etc. Further, the above data in Table 1B does not include the volume of diesel fuel products and light ends which were used to generate the heat for the cracking vessel.

Runs of purchased open market waste oil were also made at the following temperatures (all in °F): 659, 675, 681, 722. In each instance, a marketable #2 diesel fuel product was obtained. In addition, a 12 hour run was conducted with a composite average temperature of 666° F. These runs all produced results similar to the representation data provided above. Set forth in Table 2 is an analysis of the product collected at two points along the product run as well as a batch composition of the final product. The above results leads applicant to believe that the process can be carried out across a wide range of temperatures, including temperatures, lower or higher than those set out above, yet still produce high quality #2 diesel fuel.

In carrying out the above process, it has been found desirable to select an initial cracking temperature for the cracking vessel and to maintain that temperature over a prolonged time period. To accomplish this, applicant's preferred process uses a programmable logic controller provided by a Siemens/Texas Instruments 545 controller in conjunction with Interact software produced by Computer Technology Corporation, Charleston, S.C. It is well within the ordinary skill level of one trained in computers and computer software to provide a programmable logic controller and software which is capable of monitoring and automatically adjusting flow rates, temperature and temperature adjustments, pump operations, feed and withdrawal rates, reflux rates, and monitoring sensors which may be desirable on various components of the apparatus used to carry out the above process. As set forth in FIG. 4 and Table 4 the principal sensors and controls are set forth in a schematic fashion indicating a preferred manner of operation of the programmable logic controller.

An additional schematic diagram seen in FIG. 3 illustrates principal streams and equipment useful for carrying out the present invention. As set forth in Table 3, the numbered streams of FIG. 4 are indicated indicating the stream, the phase of the stream, the temperature of the stream, the composition of the stream as well as the flow rate of the stream. The data presented in FIG. 3 and Table 3 is a representative compilation of several test runs. As seen in Table 3, 7.2 gallons per minute of reflux liquid is added to the distillation column for every 10.7 gallons per minute distillate collected off the column. While the reflux ratio can be as low as 0 or as high as 2 to 1, a preferred operating range is believed to be between 0.7 to a 1 to 1 ratio.

It is thus seen that the present process provides for a method of converting used motor oil to a diesel fuel product. As many variations and modifications of the above process will be apparent to those having skill in the art from a

reading of the above specification, and, therefore, such variation are within the spirit and scope of the following appended claims.

That which is claimed is:

1. A continuous process for cracking unprocessed waste motor oil into a plurality of fuel oils comprising:
  - thermally cracking the unprocessed waste motor oil in a cracking vessel to yield a vaporized fraction of cracked hydrocarbons and a liquid fraction comprising a first fuel oil other than diesel;
  - continuously withdrawing the first fuel oil from the cracking vessel;
  - continuously withdrawing a portion of liquid remaining in the cracking vessel;
  - combining the withdrawn portion of the liquid with additional waste motor oil to obtain a combined stream of additional waste motor oil;
  - supplying the combined stream of additional waste motor oil to a heat recovery device with a circulation pump wherein the combined stream of additional waste motor oil is preheated to at least the cracking temperature;
  - simultaneously continuously introducing the combined stream of additional preheated waste motor oil into the cracking vessel in an amount to maintain a volume of waste motor oil in the cracking vessel, the combined stream of additional preheated waste motor oil being fed from the heat recovery device to the cracking vessel by the circulation pump;
  - separating the vaporized fraction of cracked hydrocarbons in a distillation column, subsequently separating light ends from the vaporized fraction, and collecting a remaining portion of the vaporized fraction, the remaining portion comprising a diesel fuel;
  - and maintaining the cracking temperature in the cracking vessel by the continuous introduction into the cracking vessel of the additional preheated waste motor oil preheated to at least the cracking temperatures,
- wherein in the process, the heat recovery device is supplied heat from a thermal oxidizer which utilizes vapors from one or more of the separated light ends, a reflux from a reflux drum, and the collected diesel fuel to generate heat via oxidation.
2. The process according to claim 1, wherein the process further comprises, prior to preheating of the additional waste motor oil by the heat recovery device, initially heating the additional waste motor oil to a first temperature by passing the additional waste motor oil through one or more heat exchangers which are supplied with heat from streams of one or more of the collected diesel fuel, a portion of liquid fraction withdrawn from and recirculated to the cracking vessel, and the first fuel oil withdrawn from the cracking vessel, wherein the additional waste motor oil heated to the first temperature is subsequently heated by the heat recovery device to at least the cracking temperature.
3. The process according to claim 1, wherein the first temperature is about 500° F.
4. The process according to claim 1, wherein the vaporized fraction of hydrocarbons enters the distillation column directly from the cracking vessel.
5. The process according to claim 1, wherein the cracking temperature ranges from 625° F. to 700° F.
6. A process according to claim 1, wherein the collected diesel fuel comprises a No. 2 diesel fuel.
7. The process according to claim 1, wherein the process further comprises feeding a portion of the collected diesel fuel to a reflux drum and providing a reflux to the top of the distillation column from the reflux drum.

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8. The process according to claim 7, wherein a reflux ratio ranges from 0.7 to 1:1.

9. The process according to claim 1, wherein the unprocessed waste motor oil contains 2 to 7% water.

10. The process according to claim 1, wherein the unprocessed waste motor oil comprises an unfiltered mixture of water and used motor oil.

11. The process according to claim 1, wherein the process further comprises blending the first fuel oil with a No. 6 fuel oil to obtain a No. 5 fuel oil.

12. process according to claim 1, wherein the first fuel oil is withdrawn at a rate of 25% in relation to the amount of additional waste motor oil introduced into the cracking vessel.

13. A continuous process for cracking unprocessed waste motor oil into a plurality of fuel oils comprising:

thermally cracking the unprocessed waste motor oil in a cracking vessel at a cracking temperature ranging from about 625° F. to 700° F. to yield a vaporized fraction of cracked hydrocarbons and a liquid fraction of a fuel oil other than diesel;

distilling the vaporized fraction of cracked hydrocarbons to separate out light ends, thereby yielding a remaining portion of the vaporized fraction of cracked hydrocarbons comprising a diesel fuel;

withdrawing a portion of the liquid fraction from the cracking vessel, combining the withdrawn portion of the liquid fraction with additional waste motor oil to obtain a combined stream of additional waste motor oil, supplying the combined stream to a heat recovery device with a circulation pump, and subsequently introducing the combined stream, preheated to at least the cracking temperature, into the cracking vessel;

continuously withdrawing the fuel oil other than diesel from the cracking vessel while continuously introducing the combined stream of additional waste motor oil preheated to the cracking temperature into the cracking vessel with the circulation pump to maintain a volume in the cracking vessel, wherein a cracking temperature in the cracking vessel is maintained by the preheated combined stream of additional waste motor oil;

wherein the heat recovery device heats the combined stream of additional waste motor oil to at least the cracking temperature with heat generated by oxidation of vapors of the separated light ends in a thermal oxidizer.

14. A process of converting used motor oil into a No. 5 fuel oil and No. 2 diesel fuel without fouling of the process equipment, comprising:

heating a quantity of unfiltered used motor oil, carrying a suspension of metal particles, at ambient pressure to a cracking temperature in a cracking vessel;

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withdrawing a first cracked oil from said cracking vessel, said first cracked oil comprising a non-diesel fuel oil carrying a suspension of metal particles upon which solid production products have formed;

withdrawing a portion of liquid from the cracking vessel; combining the withdrawn portion of the liquid with additional used motor oil containing suspended metal particles to obtain a combined stream of additional used motor oil containing suspended metal particles;

supplying the combined stream of additional used motor oil containing suspended metal particles to a heat recover device with a circulation pump;

preheating the combined stream of additional used motor oil containing suspended metal particles to at least the cracking temperature with a heat recovery device;

maintaining a fixed volume of used motor oil inside the cracking vessel by continuously introducing the combined stream of preheated additional used motor oil containing suspended metal particles into the cracking vessel such that the cracking temperature is maintained in the cracking vessel through such continuous introduction of the combined stream of preheated additional used motor oil;

separating a vaporized fraction of cracked hydrocarbons in a distillation column, wherein the vaporized fraction of hydrocarbons enters the distillation column directly upon exiting the cracking vessel;

separating light ends from the vaporized fraction, a remaining portion of the vaporized fraction comprising the No. 2 diesel fuel;

supplying the light ends to a thermal oxidizer which supplies heat to the heat recovery device by oxidizing vapors of the light ends;

blending the first cracked oil withdrawn from the cracking vessel with a No. 6 bunker oil to obtain the No. 5 fuel oil; and

filtering the No. 5 fuel oil to remove the solid production products.

15. The process according to claim 14, wherein the process further comprises, prior to preheating the additional used motor oil, initially raising the temperature of the additional used motor oil to about 500° F. by passing the additional used motor oil through a plurality of heat exchangers.

16. The process according to claim 15, wherein the process further comprises supplying a portion of the No. 2 diesel fuel to a reflux drum and providing a reflux to the distillation column from the reflux drum.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 5,885,444  
DATED : March 23, 1999  
INVENTOR(S) : Wansbrough et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5

Lines 9 and 10, should read -- The thermal oxidizer **30** is available from its designer, Thermatrix, Inc., of San --

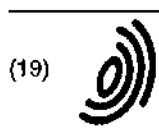
Signed and Sealed this

Thirtieth Day of December, 2003



JAMES E. ROGAN  
*Director of the United States Patent and Trademark Office*





(19)

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## (54) A process for converting waste motor oil to diesel fuel

(57) A process for thermally cracking waste motor oil into a diesel fuel product is provided. The thermal cracking process uses low temperature cracking temperatures from 625°F to 725°F with ambient pressure to generate a column distilled fraction of diesel fuel mixed with light ends, the light ends being flashed off to pro-

duce a high quality #2 diesel fuel. The process further provides for removal from the cracking vessel and additional product stream which, when filtered, is suitable for use as a #3 fuel oil and that can be further blended with a bunker oil to yield a #5 fuel product.

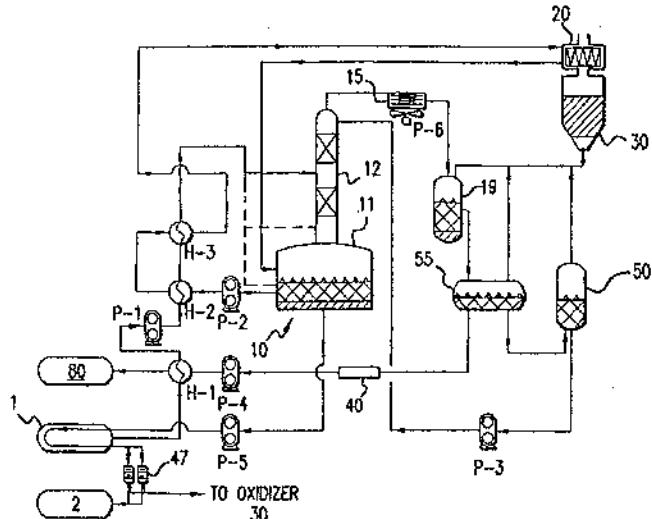


FIG.1

EP 0 940 463 A2

**Description**

[0001] This invention is directed towards the art of converting used motor oil to a useable fuel source.

5 [0002] Currently, the market for used motor oil has stymied many recycling and reclamation efforts. The market for used motor oil has largely been geared to limited processing steps which convert the used motor oil into a low quality fuel such as bunker oil (#6 fuel oil). Alternatively, a limited amount of used motor oil is reclaimed and converted into a recycled motor oil product.

10 [0003] Used motor oil retains a high energy potential. However, hazards and cost associated with collecting, storing, transporting, and general handling of used motor oil has limited the efforts to collect used motor oil for disposal or recycling. Although the prior art provides limited processing of used motor oil for other petroleum products, there remains a need for improvement within the art of converting used motor oil to a high quality energy source.

[0004] It is thus an object of this invention to provide a process for converting used motor oil into a diesel fuel product.

[0005] It is a further object of this invention to provide an apparatus and process for the low temperature, ambient pressure cracking of used motor oil into a diesel product.

15 [0006] It is yet another object of this invention to provide for mobile equipment which can be used for processing used motor oil to a diesel fuel product.

[0007] It is yet another object of this invention to provide for a process where the conversion of used motor oil to a diesel fuel product which complies with environmental regulations.

20 [0008] These, as well as other objects of this invention, are provided by a process including: providing a cracking apparatus, the apparatus comprising a cracking vessel, the vessel in communication with a heating means for heating the used oil, a distillation column in communication with the vessel, and a condenser in communication with the distillation column; supplying the cracking vessel with a source of used motor oil; heating the used motor oil to a cracking temperature; cracking the used motor oil to a mixture of lighter molecular weight compounds; separating the lighter molecular weight compounds into a first mixture of a small fraction of volatile light ends and a second mixture of diesel fuel; collecting the second mixture of diesel fuel.

25 Figure 1 is a schematic of the process and apparatus envisioned to carry out the process.

Figure 2 is a section view of a thermal oxidizer in accordance with this invention.

30 Figure 3 is an additional schematic of sensor locations and controls with optional flow patterns indicated by dashed lines.

Figure 4 is an additional schematic of the process showing streams of material flow in conjunction with Table 3.

[0009] In accordance with this invention, it has been found that waste oil from internal combustion engines can be cracked under low temperature, low severity conditions to yield #2 grade diesel fuel and #3 fuel which can be further blended into a #5 fuel. This process occurs at much lower temperatures than was conventionally thought to be possible and permits the continuous flow processing of waste oil to a #2 grade diesel fuel without coking or fouling of the cracking apparatus.

[0010] The system and its operation is schematically shown in the process flow diagram of Figure 1.

[0011] Used oil feedstock is stored in holding tank 1. The used motor oil feedstock contains a mixture of paraffins, napthenes, aromatics, and olefins with 30% of this waste oil already within a molecular weight range for a diesel product. The process and system accepts entrained water contents of 2% to 5% and has been tested with used oil feedstocks having a water content as high as 7%. However, entrained water will be converted to vapor in this system, with consequent absorption of heat. This will somewhat reduce the efficiency of the thermal oxidizer 30 to be described later, requiring more supplemental fuel input to the system to maintain process temperatures and reduce the final product yield accordingly. Finally, metal particles and shavings from engine wear are usually suspended in the waste oil. These metal particles are typically in the micron and submicron range and are sufficiently small such that they pass through standard oil filters. One skilled in the art would have thought that these metal particles would have been detrimental to the cracking employed in the instant process because the particles would have raised the temperature needed for thermal cracking, thereby increasing the energy costs associated with the cracking process. Accordingly, one skilled in the art probably would have been of the opinion that it would not have been possible to efficiently and economically crack waste motor oil containing metal particles. However, as the results shown herein indicate, Applicants have found that that is not the case.

45 [0012] The used oil feedstock is pre-heated first, while in the holding tank 1 by the #3 product stream on its way to a storage tank 2 and then, in a series of three heat exchangers (H-1, H-2, H-3), until it reaches a temperature of about 500°F before entering the reaction and distillation assembly 10. By exchanging heat, especially from the exiting #3 stream to the used oil feedstock stream, the overall energy requirements of the system is greatly reduced. Finally, pump P-1 controls the rate of feed into the system of the used oil feedstock.

50 [0013] The pre-heated used oil feedstock is fed to a reaction and distillation 10 assembly comprising a cracking vessel

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(still pot) 11 and a distillation column 12. The cracking vessel 11 typically has an operating or cracking temperature of between about 625-700°F which is maintained by a heat recovery unit 20 which is preferably powered by a thermal oxidizer 30. Although the cracking temperature can be raised to give a higher cracking rate, this would also increase the light end production. However, that is just the opposite of the desired result. The key to the present invention is to operate at as low a cracking temperature as possible to minimize light end production and avoid coking problems. While it is difficult to analyze cracking reactions, it has been found that it is possible to carry out the thermal cracking such that only small percentage of light ends are being produced relative to #2 diesel fuel product. Therefore, it is inferred that under the mild conditions employed, cracking products which constitute #2 diesel fuel product can be economically obtained. A portion of the waste oil is extracted from the vessel 11 by pump P-2 and circulated through a recirculating loop containing heat recovery unit 20 and which heats the extracted oil to 700°F producing a mixed vapor/liquid product which is then returned to the vessel 11 to maintain the vessel 11 at the proper process temperature.

[0014] The distillation column 12 is an insulated cylinder 14 feet in height with interior diameters of 10, 18, or 24 inches depending upon the model. The column 12 is filled with standard packing material known as nutter rings. Exotic column packing materials or any type of catalyst based cracking systems would be quickly poisoned by the diverse metals and other compounds found in waste oil and, therefore, are not preferred.

[0015] With proper temperature control, all of the lower molecular weight material fractions whose boiling point is that of #2 diesel or less, e.g., #2 diesel, light ends, (which may include up to 200 separate components) and volatile products leave the top of the column 12 as vapors. Gases leaving the top of the column 12 pass through an air-cooled tube-type condenser 15, where the temperature is reduced by approximately 350°F to a temperature of around 250°F, collecting mostly as liquid in the light ends flash vessel 19.

[0016] It has been found that coke formation, a common problem in petroleum cracking, is not occurring on the cracking equipment used in the present process. While coke formation is a poorly understood phenomena, it is believed that the low temperatures employed to crack the waste oil are sufficiently mild that coking is avoided. Further, removal of the #3 fuel stream from the cracking vessel is believed to be beneficial in preventing the formation of coke.

[0017] It may also be that any coke formation which may be occurring, is being selectively deposited upon the suspended metal particles. If so, then the metal/coke particles are removed as part of the #3 fuel stream withdrawal process. This slurry can be used following filtration as a #3 fuel oil source. In addition, the #3 fuel oil can be blended with a bunker oil to produce a #5 fuel oil.

[0018] Both the #2 diesel fuel stream and the #3 fuel oil stream can use a stainless steel ultra filtration apparatus from Dupont Separation Systems, Inc., Seneca, South Carolina, which consists of a series of increasingly fine matrices to trap particles of smaller and smaller size as the fuel streams are withdrawn. Each of the respective fuel outlet streams has two pump and filter assemblies arranged in series for a total of four filtration apparatuses. The duplex or in series positioning of the filter units enables the continuous flow of the fuel streams even during maintenance and replacement of a single filter unit. The filter placement described above has been found to remove 99.90% of the particles present in untreated used oil, the bulk of the particles present in untreated used oil, the bulk of the particles being between 1 to 2.5 microns in size.

[0019] It has been found that after approximately 50,000 gallons of product has been passed through the filter assemblies, the filter units should be given routine maintenance. Ideally, the filtration media is removed from the filter housing, the media and entrapped particles dried to a powder with the resulting gases added to the fuel input of the oxidizer while substantially removing all the volatile organic compounds present in the gases. Once dried, the media and entrapped particles can be disposed of, as verified by TCLP test results showing that the heavy metals are well below the maximum allowed for solid disposal.

[0020] If desired, additional filtration can be provided by a granular alumina silicate available from Pure-Flow Product Group, Newman, Georgia, which is widely used in the industry to cleanse petroleum products.

[0021] The flash vessel 19 is fitted with two electric band heaters (not shown) and will lower the flash point of the product and flash off the light ends including a light naphtha product and any water vapor. The light ends and light naphtha product are then used as fuel input to the thermal oxidizer 30. Alternatively, the #2 diesel fuel can be reheated and passed through another flash pot or a vapor separator where the more volatile light ends are separated and collected.

[0022] The remaining liquid, #2 diesel fuel, is transferred to the product tank 55. From there, the #2 diesel fuel leaves as the final product with some condensed liquids going to a reflux drum 50 and used to keep the temperature at the top of distillation column 12 somewhat cooler than that of the vessel 11. The rate of reflux, from the reflux drum 50 to the column 12, is controlled by pump P-3. This rate is quite important. The vapor liquid contact between reflux and hot vapors helps the cracking reaction proceed. The reflux is fed into the distillation column 12 at a location 18 inches below the top of the column. A distribution plate (not shown) which is present in the column helps distribute the reflux evenly over the column. However, since the reflux requires energy to bring the reflux back up to temperature, the goal is to provide only sufficient reflux to maximize the desired products. Excessive amount of reflux lowers the profits of the overall operating system. A reflux ratio of 0.7-1:1 has been found useful in the above process.

[0023] As an example, extremes of a simulation study using kerosene range from a reflux ration of 3.9 which required

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a BTU input of (1,199,970) one million, one hundred and ninety nine thousand, nine hundred and seventy BTUs per hour which gave a projected product ration of 8.5743 of number 2 diesel fuel/16.5817 number 3 diesel fuel. When the reflux ratio is raised to 7.6, the BTU requirement is (4,146,830) four million, one hundred forty six thousand, eight hundred and thirty BTUs per hour giving a product ratio of 13.8681 number 2 diesel fuel/7.6403 number 3 fuel oil. The simulation figures above, while based upon a kerosene product, demonstrate that the reflux rate can drastically effect not only the energy input requirements in the cracking process, but can affect the overall ratio of the diesel fuel product to the heavier fuel oil product.

[0024] Heavier components such as polymer oil, other cracking products with higher boiling points and solid wastes collect in the bottom of vessel 11 and are removed and sent through a filtration system 47 to remove residue, water and metal particles by pump P-5 as #3 fuel product. It has been found that a twenty five percent withdrawal for the #3 fuel product in relation to the amount of introduced feed stock is desirable. At this level of withdrawal, the overall energy input requirements and production rates for the #2 diesel fuel products are achieved in an economical fashion. However, the withdrawal rate could be raised or lowered depending on variables in feed stock quality as well as the desired quantities of the various fuel streams. The #3 fuel product can be used directly as a fuel or can be blended with #6 bunker fuel to produce a marketable #5 fuel. The #3 stream is pumped through a filtration system 47 under pressure to remove residue, water and metal particles.

[0025] The thermal oxidizer 30 takes the place of the usual reboiler. As described above, the recirculation loop between vessel 11 and heat recovery unit 20 includes two (H2, H3) of the three heat exchangers present. Accordingly, heat from the recirculation loop also pre-heats the used oil feedstock, the other heat exchanger H-1, exchanges heat from the #2 diesel final product line to the incoming used oil feedstock. The rate of recirculation through this recirculation loop is controlled by pump P-2 and the amount of heat added is a function of the fuel air flow rate to the thermal oxidizer 30.

[0026] The thermal oxidizer 30 is manufactured by Green Oasis under license from its designer, Thermatrix, Inc., of San Jose, California and is shown schematically in Figure 2. The fuel/air mixture, containing the light ends and some reflux, enters the unit at the inlet point 31 and then passes through the distribution plenum 32, where it is evenly directed into a two part 33, 34 inert ceramic matrix above. Any vapors from product tank 55 or reflux drum 50 are added to the light ends burned off in flash vessel 19 as fuel input to the thermal oxidizer 30. The first zone 33 of the matrix provides thorough mixing of oxygen and fuel.

[0027] The reaction zone 34 is pre-heated at start-up, and operates at temperatures on the order of about 1,600°F. As the vapor mixture passes into the reaction zone 34, the vapor mixture heats up to its oxidation temperature, where it completely oxidizes. Because the geometry of the inert ceramic matrix 33, 34 inhibits flame propagation, oxidation and release of heat occur in a flameless process.

[0028] The heat produced by the oxidizer is used to raise the temperature of the pre-heated feedstock to its final reaction temperature of 625°-700°F through the heat recovery unit 20. While a slight inherent pressure may exist at the bottom of column 12 by the cracking reactions, this is still within what one skilled in the art would call atmospheric distillation.

[0029] Thermal oxidizer technology offers a number of important state of the art technological advantages as well as environmental and regulatory advantages. For example, the oxidation process converts hydrocarbons to water and carbon dioxide with a destruction/removal efficiency (DRE) of at least 99.99%. By contrast, other systems have 99% DRE. This 0.99% difference represents a release of 100 times more volatile organic compounds (VOC's) into the atmosphere. Depending upon applicable law, the levels of efficiency achieved with flameless operation may exempt the system from boiler permit requirements and may qualify it for minor source exemptions. Furthermore, another advantage of the thermal oxidizer 30 is the near-100% oxidation of input fuels. This increases the amount of heat available for use in the process, reducing the amount of required fuel supplement and improving final product yield. The thermal oxidizer is also much safer than prior art alternatives. It is flameless, with anti-flashback protection, and operates below the lower explosive limit (LEL), qualifying the system for operation in hazardous areas. The thermal oxidation process is also far more easily controlled than a flame-based boiler because it may be operated over a wider range of fuel rates and is more tolerant of minor variations in fuel rates during operation.

[0030] Finally, before the #2 diesel enters storage tank 80, chemical additives from a source 40 may be added to stabilize the #2 diesel product by preventing the formation of reactive molecules such as diolefins which can add an objectionable color to the #2 diesel product. Furthermore, #2 diesel fuel product will often darken over time due to the presence of reactive olefins within the fuel. To prevent this discoloration, well known fuel stabilizers such as Stabil-AD 5300 oil additive, produced by Malco Chemical Company of Naperville, Illinois, have been found to stabilize the olefins when added according to the manufacturers directions to the #2 product.

[0031] The thermal cracking process described produces a #2 diesel fuel suitable for non-highway use. Further, the process is compatible with a wide range of waste oil feed stock. While highly uniform feed stock sources, such as those from an oil recovery system for fleet vehicles, are ideal for processing, there is a vast supply of used motor oil which varies as to content and source. For example, specialty lube shops and service stations represent a feed stock source

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of extreme variation in oil types in terms of viscosity, gas/diesel ratings, anti-oxidant content, detergent additives and the presence of synthetic oils. Further, community collection sites for used oil often contained other petroleum products such as greases, gear oils and other types of lubricating oils.

5 [0032] In accordance with this invention, it has been found that the present process is fully compatible with a wide and diverse range of waste oil starting material. The preferred process uses a pump to periodically inject preheated waste oil into the cracking vessel. Likewise, an additional pump is used to periodically withdraw materials from the bottom of the cracking vessel. As a result, of the near continuous flow of material into and from cracking vessel, there is constant variation in the makeup of the material which is contained in the cracking vessel.

10 [0033] Preferably, the cracking process is carried out at a pre-selected temperature and reflux rate. It has been observed that at any one instance, the collected product from the distillation column may not meet the specifications for the #2 diesel fuel. However, such short term fluctuations are transient and the aggregate distillation product will meet the requirements for #2 diesel fuel.

15 [0034] The process and equipment described above are able to be carried within and are supported by a conventional tractor trailer compartment which assist in the initial shipping of the equipment to an appropriate recycling site. The ability to provide a cracking process and equipment that can be supported and housed by a relatively small structure offers an advantage in that processing sites can be easily erected at numerous waste oil collection facilities. Prior art petroleum cracking processes and apparatus have been of such a large scale and size that enormous capital expenditures are required for conventional petroleum cracking facilities. Such facilities require transport of the material to be cracked to the processing site. The much smaller scale of the applicant's process and applicant's ability to possess waste oil directly into a diesel fuel product enables numerous processing sites to be set up locally, avoiding the need for the handling and transport of large quantities of waste oil to one central processing facility.

## Example One

25 [0035] During late 1993 and early 1994, a series of operational tests and material balance analyses were conducted using a test unit installed at applicant's facilities.

[0036] As indicated in Table 1A, the diesel product (GOE #2) has a sufficiently high flash point, cetane rating, and distillation profile to meet federal U.S. standards for #2 diesel fuel. Test summaries and compilation of data results are summarized in Table 1A along with fuel grade industry standards. It should be noted that the figures set forth for the standard fuel products are minimum standards and minimum ranges to be classified as the respective grade of fuel oil. In many instances, the diesel product produced, GOE #2 and GOE #3 will surpass the standards and requirements for the standard fuel oil grades as are followed by the industry.

30 [0037] It should be noted that the normal sulfur content is below the 1993 EPA standard of 0.5% but above the new (1994) standard of 0.05% for "over-the-road" fuel use. The #2 diesel fuel is therefore dyed dark blue, as required by law, to identify off-road fuels sold for agricultural, marine and industrial applications, as to which the new standard does not apply. It is believed that an additional additive or treatment may be possible that will bind the sulfur molecules to create larger particles. These larger molecules could then be removed in the filtration system, bringing sulfur content below the more restrictive limit and permitting on-road use.

35 Note: As seen in Table 1B, there is a natural volumetric expansion during processing of between 0 and 8%. This is because of the different densities of the starting material, used oil, and the less dense products of #2 and #3 fuels, etc. Further, the above data in Table 1B does not include the volume of diesel fuel products and light ends which used to generate the heat for the cracking vessel.

40 [0038] Runs of purchased open market waste oil were also made at the following temperatures (all in °F): 659, 675, 681, 722. In each instance, a marketable #2 diesel fuel product was obtained. In addition, a 12 hour run was conducted 45 with a composite average temperature of 666°F. These runs all produced results similar to the representation data provided above. Set forth in Table 2 is an analysis of the product collected at two points along the product run as well as a batch composition of the final product. The above results leads applicant to believe that the process can be carried out across a wide range of temperatures, including temperatures, lower or high than those set out above, yet still produce high quality #2 diesel fuel.

45 [0039] In carrying out the above process, it has been found desirable to select an initial cracking temperature for the cracking vessel and to maintain that temperature over a prolonged time period. To accomplish this, applicant's preferred process uses a programmable logic controller provided by a Siemens/Texas Instruments 545 controller in conjunction with Interact software produced by Computer Technology Corporation, Charleston, South Carolina. It is well within the ordinary skill level of one trained in computers and computer software to provide a programmable logic controller and software which is capable of monitoring and automatically adjusting flow rates, temperatures and temperature adjustments, pump operations, feed withdrawal rates, reflux rates, and monitoring sensors which may be desirable on various components of the apparatus used to carry out the above process. As set forth in Figure 4 and Table 4 the principal sensors and controls are set forth in a schematic fashion indicating a preferred manner of operation of the programma-

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ble logic controller.

[0040] An additional schematic diagram seen in Figure 3 illustrates principal streams and equipment useful for carrying out the present invention. As set forth in Table 3, the numbered streams of Figure 4 are indicated indicating the stream, the phase of the stream, the temperature of the stream, the composition of the stream as well as the flow rate of the stream. The data presented in Figure 3 and Table 3 is a representative compilation of several test runs. As seen in Table 3, 7.2 gallons per minute of reflux liquid is added to the distillation column for every 10.7 gallons per minute distillate collected off the column. While the reflux ratio can be as low as 0 or as high as 2 to 1, a preferred operating range is believed to be between 0.7 and 1 to 1 ratio.

[0041] It is thus seen that the present process provides for a method of converting used motor oil to a diesel fuel product. As many variations and modifications of the above process will be apparent to those having skill in the art from a reading of the above specification, and, therefore, such variation are within the spirit and scope of the following appended claims.

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TABLE 1A

Fuel Oil Grade and Standards					
	Fuel Grade	#2	#4	#5	#6
20	Gravity, API	28.5-32.8	18.5-25.6	16.9-21.3	8.2-23.8
	Viscosity	32-40	36-106	202-505	250
25	Flash Point	130-200	164-205	178-212	178-235
	Sulfur	.07-.30	.48-.59	.43-2.20	.7-2.50
30	BTU	137,000-142,000	144,000-147,000	144,000-147,000	144,000-153,000
	Cetane	38-49			
35	Color	2-5			
	Initial Boiling Point	332-436			
	Distillation	332-638			
	End Point	664-700			
	Recovery	99.00			
	Residue	0.75-1.00			
Green Oasis Fuel Products:					
		Standard #2	GOE #2	Standard #4	GOE #3
40	Gravity, API	28.5-32.8	33.1-33.4	18.5-25.6	19.6
	Flash Point	130-200	130-159	36-106	150-270
45	Sulfur	.07-.30	.22-.45	164-205	.5-1.00
	BTU	137,000-142,000	140,000+	144,000-147,000	150,000-240,000
50	Cetane	38-49	50-56		
	Color	2-5	2-3		
	Initial Boiling Point	332-436	270		
	Distillation	332-638	270-639		
	End Point	664-700	642-680		
	Recovery	99.00	99.00		
	Residue	0.75-1.00	0.3-1.0		

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Table 1B

8/23/93 Material Balance (figures in gallons)	Tank Change	#3 Fuel	Total Feed	#2 Product	Light Ends
0600-1200	340	134	474	348	40
1230-1830	369	93	462	342	34
Totals	709	227	936	690	74
% Volume		24%	100%	74%	8%

TABLE 2

Analysis #	64895-A	64895-C	64895-D
Sample Marks:	Final Product 10 : 30AM-8/19	Final Product 12 : 50PM-8/19	Final Product 3 : 30PM-8/19/93
Batch Composition			
Flash Point (D93) / °F	130	130	159
Sulphur (S) Per Cent	0.45	0.41	0.54
Water (D1744) in Per Cent	less than .03	less than .03	less than .03
API Gravity @60°F	33.4	33.2	33.1
Specific Gravity/60°F	0.8580	0.8591	0.8597
BTU/U.S. GALLON	141,452.3	141,450.0	141,560.4
Cetane Index Number	56	56	56
DISTILLATION (D86)	°F		
I.B.P.	176	220	270
10%	408	430	430
20%	506	520	514
30%	570	584	576
40%	598	614	612
50%	630	630	639
60%	636	---	---
70%	---	---	---
80%	---	---	---
90%	---	---	---
END POINT	636	630	642

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## Principal Streams

Stream Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cool Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil	114 Used Oil
Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
State	Liquid														
Temperature*	70°F	55°F	69°F	67°F	75°F	65°F	75°F	65°F	75°F	60°F	75°F	60°F	75°F	75°F	75°F
Composition*	Hydrocarbon														
Other	Misc.														
Metals, Solids	Misc.														
Flow Rate:	4.6 GPM	5.7 GPM	7.1 GPM	71.2 GPM	4017.9 GPM	1.8 GPM	1.4 GPM	1.4 GPM	1.4 GPM	10.7 GPM	7.2 GPM	3.3 GPM	3.3 GPM	3.3 GPM	3.3 GPM
	295.7 GPH	342.5 GPH	444.1 GPH	4274.8 GPH	241073.8 GPH	108.2 GPH	85.6 GPH	85.6 GPH	85.6 GPH	64.6 GPH	479.1 GPH	200 GPH	200 GPH	200 GPH	200 GPH

## Equipment Information

Heating	10.5 sq. ft.	P-1	Gear Pump	9 GPM	Pumping	9 GPM	T-1	Cracking Vessel	280 GAL
H-1 Heat Exchanger	10.5 sq. ft.	P-2	Gear Pump	90 GPM			T-1	Cracking Vessel	45 GAL
H-2 Heat Exchanger	10.5 sq. ft.	P-3	Gear Pump	9 GPM			T-2	Flash Pot (Tank)	123 GAL
H-3 Heat Exchanger	10.5 sq. ft.	P-4	Gear Pump	9 GPM			D-1	Product Tank	35 GAL
H-4 Air-Cooled Condenser	800 sq. ft.	P-5	Gear Pump	6 GPM			D-2	Reflux Tank	
H-5 Heat Recovery Unit	1,68 mmBtu/lb								

TABLE 3

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### Principal Sensors and Controls

The major component-sensor control loops, managed by the Programmable Logic Controller (PLC), are shown schematically in Figure 4 and described below.

Loop	Components	Sensors	Comments
A	P-1 Main Feed Pump	N/A	Feed rate in GPH is set by operator from console.
B	P-2 Recirculation Pump	N/A	Recirculation rate is set by operator from console. In case of P-2 failure, system automatically shuts down and recirculation is shutdown to pump P-5 to prevent component damage.
C	P-5 #3 Product Pump	T-1 Level	#3 bottoms product is pumped from T-1 to maintain T-1 level.
D	P-3 Reflux Pump	Column Temperature (RTD-5, RTD-6)	Reflux rate responds to column temperature setpoints. Reflux is increased to lower temperature or reduced to increase it.
E	H-6 Condenser P-6 Condenser Fan R-300 Thermal Oxidizer	RTD-13 Condenser Outlet Temp. RTD-9 H-5 Outlet Temp. S1-S8 Oxidizer Temps.	System adjusts process heat input to maintain H-5 Heat Recovery Unit, and thereby maintain T-1 temperature. When required, heat input is increased by Increasing Condenser Outlet Temperature (RTD-13), which increases the vapor component of the condenser outlet stream, adding more fuel to the oxidizer. This is done by reducing fan P-8 RPM. Alternatively, additional fuel may be added directly from the top of the column (stream and controls not shown).
F	P-4 Final Product Pump	O-1 Level	#2 diesel product is pumped from D-1 to maintain D-1 level.
G	Flash Pot and Heaters	Flash Pot Temperature (RTD-14)	Heaters are activated when necessary to maintain Flash Pot temperature setpoint.
H	Additive Injector	N/A	Rate in PPM is set by operator from console.
I	Sludge Removal System	Pressure at filter inlets (sensors and pumps not shown).	PLC senses filter full by increase in filter inlet pressure. Duty is then switched to alternate filter and sludge removed by pump reversal and sent to kiln at thermal oxidizer.

TABLE 4

### 55 Claims

1. A continuous process for cracking waste motor oil into a plurality of fuel oils comprising:

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thermally cracking the unprocessed waste motor oil in a cracking vessel to yield a vaporized fraction of cracked hydrocarbons and a liquid fraction comprising a first fuel oil other than diesel;

continuously withdrawing the first fuel oil from the cracking vessel wherein a rate of the continuous withdrawal of the first fuel oil is sufficient to prevent fouling of the cracking vessel;

5 simultaneously continuously introducing additional preheated waste motor oil into the cracking vessel in an amount to maintain a volume of waste motor oil in the cracking vessel, wherein the additional waste motor oil is preheated prior to introduction into the cracking vessel to at least a cracking temperature by a heat recovery device, the additional preheated waste motor oil being fed from the heat recovery device to the cracking vessel;

10 separating the vaporized fraction of cracked hydrocarbons in a distillation column, subsequently separating light ends from the vaporized fraction, and collecting a remaining portion of the vaporized fraction, the remaining portion comprising a diesel fuel;

and maintaining the cracking temperature in the cracking vessel by the continuous introduction into the cracking vessel of the additional preheated waste motor oil preheated to at least the cracking temperature.

15 2. The process according to claim 1, characterized in that the process further comprises withdrawing a portion of the liquid fraction from the cracking vessel, combining the withdrawn portion of the liquid fraction with additional waste motor oil to obtain a combined stream, supplying the combined stream to the heat recovery device, and subsequently introducing the combined stream, preheated to at least the cracking temperature, into the cracking vessel.

20 3. The process according to claims 1 or 2, characterized in that the heat recovery device is supplied heat from a thermal oxidizer, the thermal oxidizer supplying heat to the heat recovery device by oxidizing vapors from one or more of the separated light ends, a reflux from a reflux drum, and the collected diesel fuel.

4. A continuous process for cracking waste motor oil into a plurality of fuel oils comprising:

25 thermally cracking the unprocessed waste motor oil in a cracking vessel to yield a vaporized fraction of cracked hydrocarbons and a liquid fraction comprising a first fuel oil other than diesel;

continuously withdrawing the first fuel oil from the cracking vessel;

continuously withdrawing a portion of liquid remaining in the cracking vessel;

30 combining the withdrawn portion of the liquid with additional waste motor oil to obtain a combined stream of additional waste motor oil;

supplying the combined stream of additional waste motor oil to a heat recovery device with a circulation pump wherein the combined stream of additional waste motor oil is preheated to at least the cracking temperature;

35 simultaneously continuously introducing the combined stream of additional preheated waste motor oil into the cracking vessel in an amount to maintain a volume of waste motor oil in the cracking vessel, the combined stream of additional preheated waste motor oil being fed from the heat recovery device to the cracking vessel by the circulation pump;

separating the vaporized fraction of cracked hydrocarbons in a distillation column, subsequently separating light ends from the vaporized fraction, and collecting a remaining portion of the vaporized fraction, the remaining portion comprising a diesel fuel;

40 and maintaining the cracking temperature in the cracking vessel by the continuous introduction into the cracking vessel of the additional preheated waste motor oil preheated to at least the cracking temperature,

characterized in that in the process, the heat recovery device is supplied heat from a thermal oxidizer which utilizes vapors from one or more of the separated light ends, a reflux from a reflux drum, and the collected diesel fuel to generate heat via oxidation.

45 5. The process according to any of the preceding claims, characterized in that the cracking temperature ranges from 625°F to 700°F.

50 6. The process according to any of the preceding claims, characterized in that the process further comprises feeding a portion of the collected diesel fuel to a reflux drum and providing a reflux to the top of the distillation column from the reflux drum, the reflux ratio ranging from 0.7 to 1:1.

7. The process according to any of the preceding claims, characterized in that the first fuel oil is withdrawn at a rate of 25% in relation to the amount of additional waste motor oil introduced into the cracking vessel.

55 8. A continuous process for cracking waste motor oil into a plurality of fuel oils comprising:

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thermally cracking the unprocessed waste motor oil at a cracking temperature ranging from about 625°F to 700°F to yield a vaporized fraction of cracked hydrocarbons and a liquid fraction of a fuel oil other than diesel; distilling the vaporized fraction of cracked hydrocarbons to separate out light ends, thereby yielding a remaining portion of the vaporized fraction of cracked hydrocarbons comprising a diesel fuel;

5 continuously withdrawing the fuel oil other than diesel from the cracking vessel while introducing additional waste motor oil into the cracking vessel to maintain a volume in the cracking vessel, wherein a cracking temperature in the cracking vessel is maintained by preheating the additional waste motor oil to at least the cracking temperature with a heat recovery device prior to continuously introducing the additional waste motor oil into the cracking vessel.

10 9. A process of converting used motor oil into a No. 5 fuel oil and No. 2 diesel fuel without fouling of the process equipment, comprising:

15 heating a quantity of unfiltered used motor oil, carrying a suspension of metal particles, at ambient pressure to a cracking temperature;

withdrawing a first cracked oil from said cracking vessel, said first cracked oil comprising a non-diesel fuel oil carrying a suspension of metal particles upon which solid production products have formed;

20 preheating additional used motor oil containing suspended metal particles to at least the cracking temperature with a heat recovery device;

maintaining a fixed volume of used motor oil inside the cracking vessel by continuously introducing the pre-heated additional used motor oil containing suspended metal particles into the cracking vessel such that the cracking temperature is maintained in the cracking vessel through such continuous introduction of the pre-heated additional used motor oil;

25 separating a vaporized fraction of cracked hydrocarbons in a distillation column, wherein the vaporized fraction of hydrocarbons enters the distillation column directly upon exiting the cracking vessel;

separating light ends from the vaporized fraction, a remaining portion of the vaporized fraction comprising the No. 2 diesel fuel;

30 blending the first cracked oil withdrawn from the cracking vessel with a No. 6 bunker oil to obtain the No. 5 fuel oil; and

filtering the No. 5 fuel oil to remove the solid production products.

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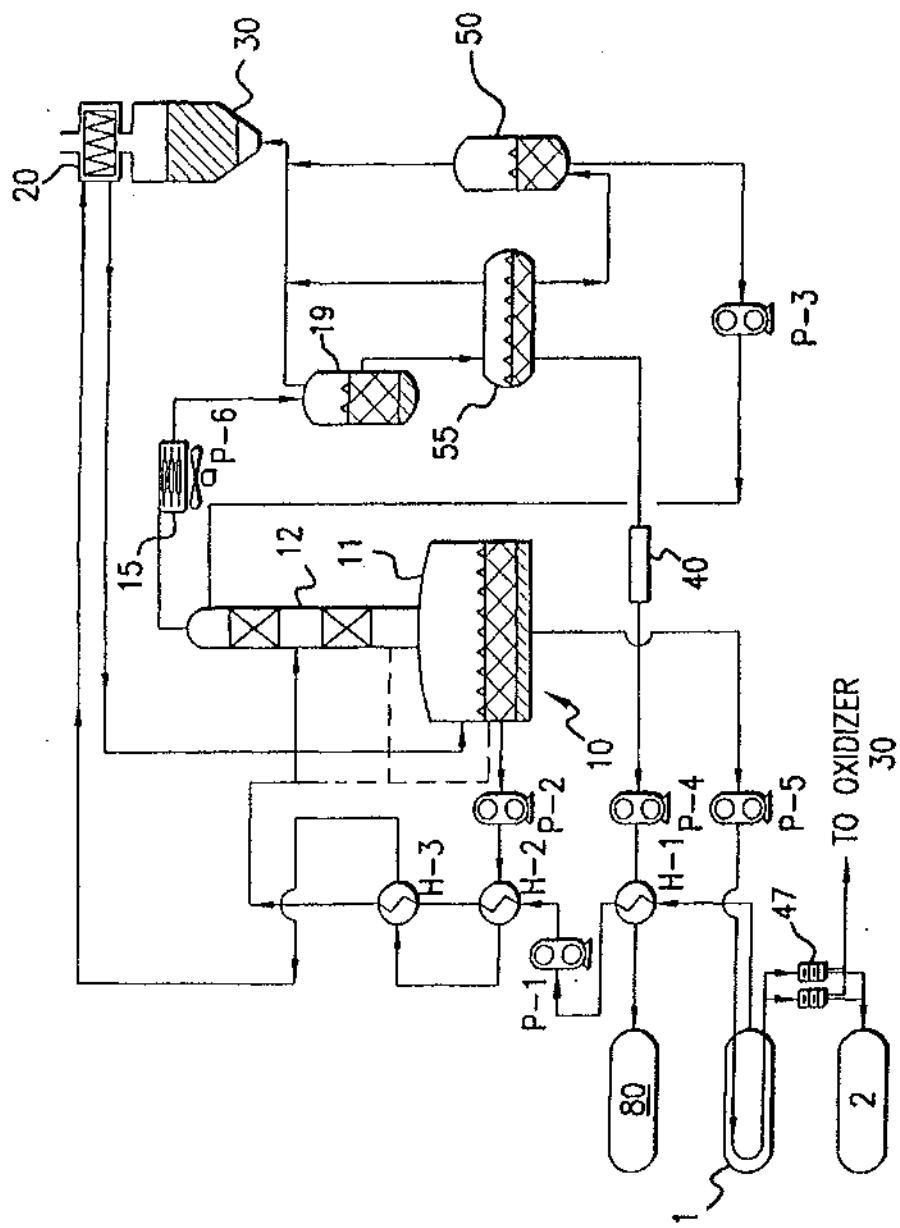
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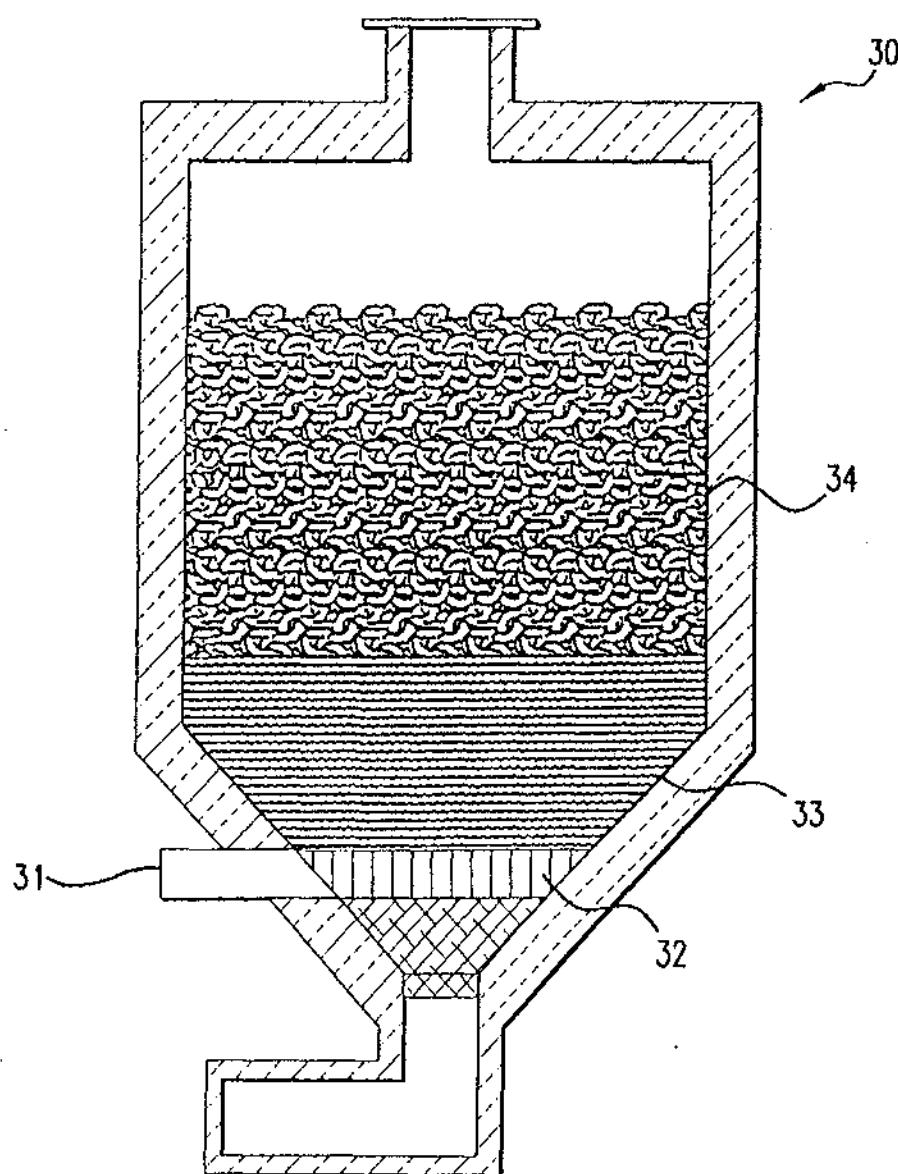


FIG.2

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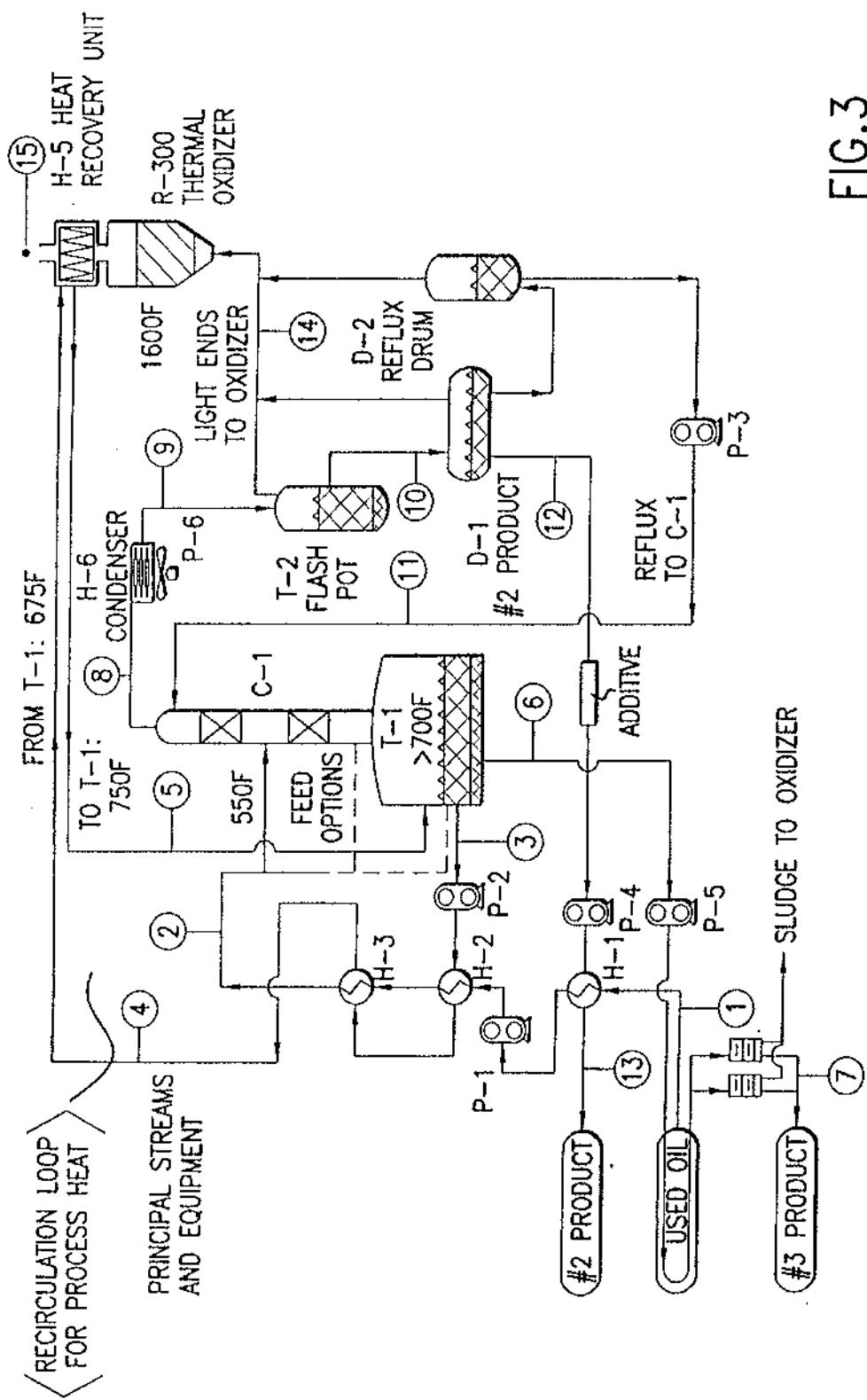


FIG. 3

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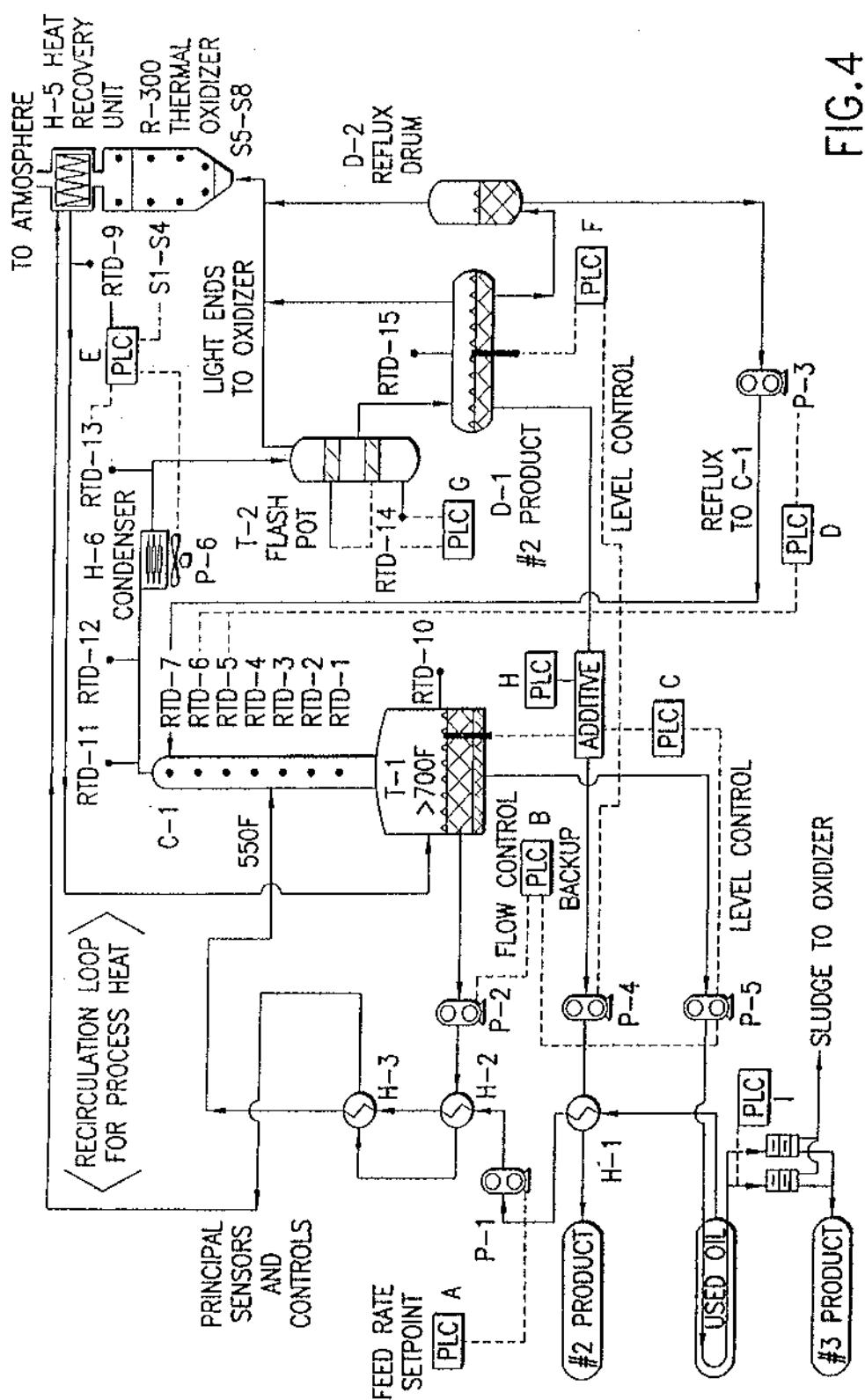


FIG. 4



## SECURITY AGREEMENT

Date of Agreement:	May 25, 1999
Name of Owner:	GREEN OASIS ENVIRONMENTAL, INC.
Address of Debtor:	184 E. Bay Street Suite 302 Charleston, S.C. 29401
Name of Borrower:	GREEN OASIS ENVIRONMENTAL, INC.
Address of Borrower:	184 E. Bay Street Suite 302 Charleston, S.C. 29401
Name of Lender:	BALALLAN LIMITED
Address of Lender:	50 Broadway Suite 2300 New York, New York 10004

**1. SECURITY INTEREST.** For good and valuable consideration, Owner grants to Lender identified above a continuing security interest in the Collateral described below to secure the Obligations described in this Agreement.

**2. SECURED OBLIGATIONS.** The security interest granted secures the payment and performance of any and all liabilities, obligations, agreements and undertakings of Borrower (or any one or more of them) and Owner (or any one or more of them) to Lender, in any amount, whether now existing or hereafter arising (including those owed by Borrower or Owner to others and acquired by Lender through purchase, assignment or otherwise), however created, evidenced or arising, whether individually or jointly with others and whether absolute or contingent, direct or indirect, as maker, endorser, guarantor, surety or otherwise, liquidated or unliquidated, matured or unmatured, whether or not secured by other collateral, and including, without limitation (a) all obligations to perform or forebear from performing any acts, and (b) all overdrafts on deposits or accounts maintained by Borrower or Owner with Lender, and (c) the liabilities, obligations, agreements and undertakings of Borrower or Owner to reimburse Lender for all amounts funded by Lender pursuant to any such letter of credit, and (d) all costs and fees for filing and recording documentation, all costs incurred in the collection or enforcement of this Agreement, including attorneys' fees and legal expenses, including all appeals, whether or not a lawsuit is instituted and whether or not such collection or enforcement occurs before or after any bankruptcy proceeding is filed by or against any Borrower or Owner (all of which are collectively referred to as the "Obligations").

**3. COLLATERAL.** All of Owner's right, title and interest in the following described property whether now or hereafter existing or now owned or hereafter acquired by Owner and wherever located shall constitute the "Collateral":

- (a) Accounts and contract rights (as defined in the UCC);
- (b) general intangibles (as defined in the UCC);
- (c) chattel paper, documents, equipment, fixtures, instruments, and inventory (as those terms are defined in the UCC);
- (d) furniture;



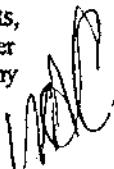
- (e) monies, securities, and other property now or hereafter held or received by, or in transit to, Payee from or for Maker, whether for safekeeping, pledge, custody, transmission, collection, or otherwise, and all of Maker's deposits, reserves, and credit balances in Payee's possession;
- (f) monies or instruments pertaining to any of the above;
- (g) accessions, accessories, additions, amendments, attachments, modifications, replacements and substitutions to any of the above;
- (h) components and supplies of any of the above;
- (i) books, records and other property at any time evidencing or relating to any of the foregoing property; and
- (j) proceeds of any of the foregoing property including, without limitation, the proceeds of any insurance policies covering any of the foregoing property.

**4. OWNER'S TAXPAYER IDENTIFICATION.** Owner's federal taxpayer identification number is 57-0970282.

**5. RESIDENCY/LEGAL STATUS.** Owner is a Corporation duly organized, validly existing and in good standing under the laws of the state of Florida.

**6. REPRESENTATIONS, WARRANTIES, AND COVENANTS.** Owner represents, warrants and covenants to Lender that:

- (a) Owner is and shall remain the sole owner of the Collateral;
- (b) Neither Owner, nor, to the best of Owner's knowledge, any other party has used, generated, released, discharged, stored, or disposed of any hazardous waste, toxic substance, or related material or transported any such material except as allowed by and in accordance with applicable federal, state and local law and regulation. Owner shall not commit or permit such actions to be taken in the future. The term "Hazardous Materials" shall mean any substance, material, or waste which is or becomes regulated by any governmental authority including, but not limited to, (i) petroleum; (ii) asbestos; (iii) polychlorinated biphenyls; (iv) those substances, materials or wastes designated as a "hazardous material" pursuant Section 311 of the Clean Water Act or listed pursuant to Section 307 of the Clean Water Act or any amendments or replacements to these statutes; (v) those substances, materials or wastes defined as a "hazardous substance" pursuant to Section 101 of the Comprehensive Environmental Response, Compensation and Liability Act or any amendments or replacements to that statute. Owner is in compliance in all respects with all applicable federal, state and local laws and regulations, including, without limitation, those relating to "Hazardous Materials", as defined herein, and other environmental matters (the "Environmental Laws") and neither the federal government nor any other government or quasi governmental entity has filed a lien of the Collateral, nor are there any pending or threatened governmental, judicial or administrative actions with respect to environmental matters, which involve the Collateral;
- (c) Owner's chief executive office, chief place of business, office where its business records relating to the Collateral, or residence is the address identified above. Owner shall immediately advise Lender in writing of any change in or addition to the foregoing addresses;
- (d) Owner shall not become a party to any restructuring of its form of business or participate in any consolidation, merger, liquidation or dissolution without Lender's prior written consent;
- (e) Owner shall notify Lender of the nature of any intended change of Owner's name, or the use of an trade name, and the effective date of such change;
- (f) The Collateral is and shall at all times remain free of all tax and other liens, security interests, encumbrances and claims of any kind except for those belonging to Lender. Without Lender waiving the Event of Default as a result thereof, Owner shall take any action and execute any

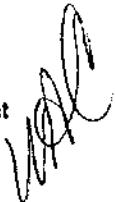


document needed to discharge any liens, security interests, encumbrances and claims against the Collateral;

- (g) Owner shall defend the Collateral against all claims and demands of all persons at any time claiming any interest therein;
- (h) All of the goods, fixtures, minerals or the like, and standing timber constituting the Collateral is and shall be located at Owner's executive offices, places of business, residence and domiciles specifically described in this Agreement. Owner shall not change the location of any Collateral without the prior written consent of Lender;
- (i) Owner shall provide Lender with possession of all chattel paper and instruments constituting the Collateral, and Owner shall promptly mark all chattel paper, instruments, and documents constituting the Collateral to show that the same are subject to Lender's security interest;
- (j) All of Owner's accounts or contract rights; chattel paper; documents; general intangibles; instruments; and federal, state, county, and municipal government and other permits and licenses; trusts, liens, contracts, leases, and agreements constituting the Collateral are and shall be valid, genuine and legally enforceable obligations and rights belonging to Owner against one or more third parties and not subject to any claim, defense, set-off or counterclaim of any kind;
- (k) Owner shall not amend, modify, replace, or substitute any account or contract right; chattel paper, document; general intangible; or instrument constituting the Collateral without the prior written consent of Lender;
- (l) Owner has the right and is duly authorized to enter into and perform its obligations under this Agreement. Owner's execution and performance of these obligations do not and shall not conflict with the provisions of any statute, regulation, ordinance, rule of law, contract or other agreement which may now or hereafter be binding on Owner.
- (m) No action or proceeding is pending against Owner which might result in any material or adverse change in its business operations or financial condition or materially affect the Collateral;
- (n) Owner has not violated and shall not violate any applicable federal, state, county or municipal statute, regulation or ordinance (including but not limited to those governing Hazardous Materials) which may materially and adversely affect its business operations or financial condition of the Collateral;
- (o) Owner shall, upon Lender's request, deposit all proceeds of the Collateral into an account or accounts maintained by Owner or Lender at Lender's institution;
- (p) Owner will, upon receipt, deliver to Lender as additional Collateral all securities distributed on account of the Collateral such as stock dividends and securities resulting from stock splits, reorganizations and recapitalizations;
- (q) Owner agrees to the terms of the Obligations and to the terms of any renewals, extensions, amendments, modifications, replacements or substitutions of the Obligations;
- (r) Owner agrees Lender may enter into agreements in the future with Borrower which, if this Agreement so provides, will become Obligations secured by the Collateral described in this Agreement;
- (s) Owner agrees property other than the Collateral may also secure the Obligations; Lender shall have no obligation to exercise its rights against such property prior to exercising its rights against the Collateral; Lender may accept substitutions or exchanges for any such property; Lender may release its security interest in such property at any time; and parties other than Borrower may be or may become obligated under the Obligations; and
- (t) This Agreement and the obligations described in this Agreement are executed and incurred for business and not consumer purposes.

**7. SALE OF COLLATERAL.** Owner shall not assign, convey, lease, sell or transfer any of the Collateral to any third party without the prior written consent of Lender except for sales of inventory to buyers in the ordinary course of business.

**8. FINANCING STATEMENTS AND OTHER DOCUMENTS.** Owner shall at any time and from time to time take all actions and execute all documents required by Lender to attach, perfect and maintain Lender's security interest in the Collateral and establish and maintain Lender's right to receive the payment



of the proceeds of the Collateral including, but not limited to, executing any financing statements, fixture filings, continuation statements, notices of security interest and other documents required by the Uniform Commercial Code and other applicable law. Owner shall pay the costs of filing such documents in all offices wherever filing or recording is deemed by Lender to be necessary or desirable. Owner authorizes Lender to execute and file any financing statements, as well as extensions, renewals and amendments of financing statements in such form as Lender may require to perfect and maintain perfection of any security interest granted in this Agreement.

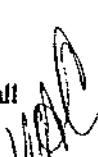
**9. INQUIRIES AND NOTIFICATION TO THIRD PARTIES.** Owner hereby authorizes Lender to contact any third party and make any inquiry pertaining to Owner's financial condition or the Collateral. In addition, Lender is authorized to provide oral or written notice of its security interest in the Collateral to any third party.

**10. LOCK BOX, COLLATERAL ACCOUNT.** If Lender so requests at any time (whether or not Owner is in default of this Agreement), Owner will direct each of its account debtors to make payments due under the relevant account or chattel paper directly to a special lock box to be under the control of Lender. Owner hereby authorizes and directs Lender to deposit into a special collateral account to be established and maintained with Lender all checks, drafts and cash payments received in the lock box. All deposits in the collateral account shall constitute proceeds of Collateral and shall not constitute payment of any Obligation. At its option, Lender may, at any time, apply finally collected funds on deposit in the collateral account to the payment of the Obligations in such order of application as Lender may determine, or permit Owner to withdraw all or any part of the balance on deposit into the collateral account, all payments on accounts and chattel paper received by Owner. All such payments shall be delivered to Lender in the form received (except for Owner's endorsement if necessary). Until so deposited, all payments on accounts and chattel paper received by Owner shall be held in trust by Owner for and as the property of Lender and shall not be commingled with any funds or property of Owner.

**11. COLLECTION OF INDEBTEDNESS FROM THIRD PARTIES.** Lender shall be entitled to notify, and upon the request of Lender, Owner shall notify any account debtor or other third party (including, but not limited to, insurance companies) to pay any indebtedness or obligation owing to Owner and constituting the Collateral (collectively "Indebtedness") to Lender whether or not a default exists under this Agreement. Owner shall diligently collect the Indebtedness owing to Owner from its account debtors and other third parties until the giving of such notification. In the event that Owner possesses or receives possession of any instruments or other remittances with respect to the Indebtedness following the giving of such notification or if the instruments or other remittances constitute the prepayment of any Indebtedness or the payment of any insurance proceeds, Owner shall hold such instruments and other remittances in trust for Lender apart from its other property, endorse the instruments and other remittances to Lender, and immediately provide Lender with possession of the instruments and other remittances. Lender shall be entitled, but not required, to collect (by legal proceedings or otherwise), extend the time for payment, compromise, exchange or release any obligor or collateral, or otherwise settle any of the Indebtedness whether or not an Event of Default exists under this Agreement. Lender shall not be liable to Owner for any action, error, mistake, omission or delay pertaining to the actions described in this paragraph or any damages resulting therefrom.

**12. POWER OF ATTORNEY.** Owner hereby appoints Lender as its attorney-in-fact to endorse Owner's name on all instruments and other remittances payable to Owner with respect to the Indebtedness, including any items received by Lender in any lock box account, or other documents pertaining to Lender's actions in connection with the Indebtedness. In addition, Lender shall be entitled, but not required, to perform any action or execute any document required to be taken or executed by Owner under this Agreement. Lender's performance of such action or execution of such documents shall not relieve Owner from any obligation or cure any default under this Agreement. The powers of attorney described in this paragraph are coupled with an interest and are irrevocable.

**13. USE AND MAINTENANCE OF COLLATERAL.** Owner shall use the Collateral solely in the ordinary course of its business, for the usual purposes intended by the manufacturer (if applicable), with due care, and in compliance with all applicable laws, ordinances, regulations, requirements and rules of all



federal, state, county and municipal authorities including environmental laws and regulations and insurance policies. Owner shall not make any alterations, additions or improvements to the Collateral without the prior written consent of Lender. Owner shall ensure that Collateral which is not now a fixture does not become a fixture. Without limiting the foregoing, all alterations, additions and improvements made to the Collateral shall be subject to the security interest belonging to Lender, shall not be removed without the prior written consent of the Lender, and shall be made at Owner's sole expense. Owner shall take all actions and make any repairs or replacements needed to maintain the Collateral in good condition and working order.

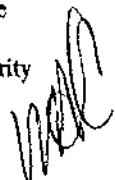
**14. LOSS OR DAMAGE.** Owner shall bear the entire risk of any loss, theft, destruction or damage (collectively "Loss or Damage") to all or any part of the Collateral. In the event of any Loss or Damage, Owner will either restore the Collateral to its previous condition, replace the Collateral with similar property acceptable to Lender in its sole discretion, or pay or cause to be paid to Lender the decrease in the fair market value of the affected Collateral.

**15. INSURANCE.** The Collateral will be kept insured for its full value against all hazards including loss or damage caused by fire, collision, theft or other casualty. If the Collateral consists of a motor vehicle, Owner will obtain comprehensive and collision coverage in amounts at least equal to the actual cash value of the vehicle. Insurance coverage obtained by Owner shall be from a licensed insurer subject to Lender's approval. The insurance policies shall require the insurance company to provide Lender with at least thirty (30) days' written notice before such policies are altered or cancelled in any manner. In the event Owner fails to acquire or maintain insurance, Lender (after providing notice as may be required by law) may in its discretion procure appropriate insurance coverage upon the Collateral and charge the insurance cost as an advance of principal under the promissory note. Owner shall furnish Lender with evidence of insurance indicating the required coverage. Lender may act as attorney-in-fact for Owner in making and settling claims under insurance policies, canceling any policy or endorsing Owner's name on any draft or negotiable instrument drawn by any insurer.

**16. INDEMNIFICATION.** Lender shall not assume or be responsible for the performance of any of Owner's obligations with respect to the Collateral under any circumstances. Owner shall immediately provide Lender with written notice of and hereby indemnifies and holds Lender and its shareholders, directors, officers, employees and agents harmless from all claims, damages, liabilities (including attorneys' fees and legal expenses), causes of action, actions, suits and other legal proceedings (collectively "Claims") pertaining to its business operations or the Collateral including, but not limited to, those arising from Lender's performance of Owner's obligations with respect to the Collateral or claims involving Hazardous Materials. Owner, upon the request of Lender, shall hire legal counsel to defend Lender from such Claims, and pay the attorneys' fees, legal expenses and other costs to the extent permitted by applicable law, incurred in connection therewith. In the alternative, Lender shall be entitled to employ its own legal counsel to defend such Claims at Owner's cost.

**17. TAXES AND ASSESSMENTS.** Owner shall execute and file all tax returns and pay all taxes, licenses, fees and assessments relating to its business operations and the Collateral (including, but not limited to, income taxes, personal property taxes, withholding taxes, sales taxes, use taxes, excise taxes and worker's compensation premiums) in a timely manner.

**18. INSPECTION OF COLLATERAL AND BOOKS AND RECORDS.** Owner shall allow Lender or its agents to examine, inspect and make abstracts and copies of the Collateral and Owner's books and records pertaining to Owner's business operations and financial condition or the Collateral during normal business hours. Owner shall provide any assistance required by Lender for these purposes. All of the signatures and information pertaining to the Collateral or contained in the books and records shall be genuine, true, accurate and complete in all respects. Owner shall note the existence of Lender's security interest in books and records pertaining to the Collateral.



**19. EVENT OF DEFAULT.** An Event of Default shall occur under this Agreement in the event that Owner, Borrower or and guarantor of any of the Obligations:

- (a) fails to make any payment under this Agreement or any other indebtedness to Lender when due;
- (b) fails to perform any obligation or breaches any warranty or covenant to Lender contained in this Agreement or any other present or future written agreement regarding this or any other indebtedness to Lender;
- (c) provides or causes any false or misleading signature or representation to be provided to Lender;
- (d) sells, conveys, or transfers rights in any Collateral without the written approval of Lender; destroys, loses or damages such Collateral in any material respect; or subjects such Collateral to seizure, confiscation or condemnation;
- (e) seeks to revoke, terminate or otherwise limit its liability under any continuing guaranty;
- (f) has a garnishment, judgment, tax levy, attachment or lien entered or served against Owner, Borrower, or any guarantor, or any of their property including the Collateral;
- (g) dies, becomes legally incompetent, is dissolved or terminated, ceases to operate its business, becomes insolvent, makes an assignment for the benefit of creditors, fails to pay any debts as they become due, or becomes the subject of any bankruptcy, insolvency or debtor rehabilitation proceeding;
- (h) allows the Collateral to be used by anyone to transport or store goods, the possession, transportation, or use of which, is illegal;
- (i) fails to provide Lender evidence of satisfactory financial condition;
- (j) has a majority of its outstanding voting securities sold, conveyed, or transferred to any person or entity other than any person or entity that has the majority ownership as of the date of the execution of this agreement;
- (k) if Lender deems itself insecure in good faith with respect to any of the Obligation; or
- (l) is subject to an Event of Default under any agreement between Borrower and Lender, specifically including that Demand Promissory Note executed and dated as of even date hereof.

**20. RIGHTS OF LENDER ON EVENT OF DEFAULT.** If there is and Event of Default under this Agreement, Lender shall be entitled to exercise one or more of the following remedies without notice or demand (except as required by law):

- (a) to declare the Obligations due and payable in full; such acceleration shall be automatic and immediate if the Event of Default is a filing under the Bankruptcy Code;
- (b) to collect the outstanding Obligations with or without resorting to judicial process;
- (c) to change Owner's mailing address, open Owner's mail, and retain any instruments or other remittances constituting the Collateral contained therein;
- (d) to take possession of any Collateral in any manner permitted by law;
- (e) to apply for and obtain, without notice and upon ex parte application, the appointment of a receiver for the Collateral without regard to Owner's financial condition or solvency, the adequacy of the Collateral to secure the payment or performance of the obligations, or the existence of any waste to the Collateral;
- (f) to require Owner to deliver and make available to Lender any Collateral at a place reasonably convenient to Owner and Lender;
- (g) to sell, lease or otherwise dispose of any Collateral and collect any deficiency balance with or without resorting to legal process;
- (h) to set-off Owner's obligations against any amounts due to Owner including, but not limited to, monies, instruments, and deposit accounts maintained with Lender; and
- (i) to exercise all other rights available to Lender under any other applicable law.

Lender's rights are cumulative and may be exercised together, separately, and in any order. Unless the Collateral is perishable, threatens to decline speedily in value or is of a type customarily sold on a



recognized market, Lender will provide five (5) days notice of the time and place of any sale or intended disposition as required under the Uniform Commercial Code. If the Collateral consists of securities, Lender shall be entitled to transfer the securities into the name of Lender or its designee and to vote the securities. Lender shall be authorized to notify the issuer of the securities to remit any related dividends, interest, and securities resulting from stock splits, reorganizations, and capitalization's directly to Lender or its designee. In the event that Lender institutes an action to recover any Collateral or seek recovery of any Collateral by way of a prejudgment remedy in an action against Owner, Owner waives the posting of any bond which might otherwise be required. Upon default, Owner shall segregate all proceeds of Collateral and hold such proceeds in trust for Lender. Lender's remedies under this paragraph are in addition to those under any other written agreement or applicable law.

**21. APPLICATION OF PAYMENTS.** Whether or not a default has occurred under this Agreement, all payments made by or on behalf of Owner and all credits due to Owner from the disposition of the Collateral or otherwise may be applied against the amounts paid by Lender (including attorneys' fees and legal expenses) in connection with the exercise of its rights or remedies described in this Agreement and any interest thereon and then to the payment of the remaining Obligations in whatever order Lender chooses.

**22. REIMBURSEMENT OF AMOUNTS EXPENDED BY LENDER.** Owner shall reimburse Lender for all amounts (including attorneys' fees and legal expenses) expended by Lender in the performance of any action required to be taken by Owner or the exercise of any right or remedy belonging to Lender under this Agreement, together with interest thereon at the lower of the highest rate described in any promissory note or credit agreement executed by Borrower or Owner to Lender or the highest rate allowed by law from the date of payment until the date of reimbursement. These sums shall be included in the definition of Obligations, shall be secured by the Collateral identified in this Agreement and shall be payable upon demand. Lender has no duty to take and action to protect the value of the Collateral or to exercise any rights of the Owner with respect to the Collateral.

**23. ASSIGNMENT.** Owner shall not be entitled to assign any of its rights, remedies or obligations described in this Agreement without the prior written consent of Lender. Consent may be withheld by Lender in its sole discretion. Lender shall be entitled to assign any of its rights and remedies described in this Agreement without notice to or the prior written consent of Owner.

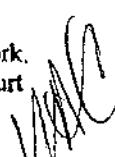
**24. MODIFICATION AND WAIVER.** The modification or waiver of any of Owner's obligations or Lender's rights under this Agreement must be contained in a writing signed by Lender. Lender may perform any of Owner's obligations or delay or fail to exercise any of its rights without causing a waiver of those obligations or rights. A waiver on one occasion shall not constitute a waiver on any other occasion. Owner's obligations under this Agreement shall not be affected if Lender amends, compromises, exchanges, fails to exercise, impairs or releases any of the obligations belonging to any Owner or third party or any of its rights against any Owner, third party, Collateral, or any other property securing the Obligations.

**25. SUCCESSORS AND ASSIGNS.** This Agreement shall be binding upon an insure to the benefit of Owner and Lender and their respective successors, assigns, trustees, receivers, administrators, heirs, personal representatives, legatees, and devisees.

**26. NOTICES.** Any notice or other communication to be provided under this Agreement shall be in writing and mailed to the parties at the addresses described in this Agreement or such other address as the parties may designate in writing from time to time.

**27. SEVERABILITY.** If any provision of this Agreement violates the law or is unenforceable, the rest of the Agreement shall remain valid.

**28. APPLICABLE LAW.** This Agreement shall be governed by the laws of the State of New York. Unless applicable law provides otherwise, Owner consents to the jurisdiction and venue of any court



located in the State of New York selected by Lender in the event of any legal proceeding under this Agreement.

**29. COLLECTION COSTS.** To the extent permitted by law, Owner agrees to pay all costs of collection and attorneys' fees in realizing on the Collateral.

**30. MISCELLANEOUS.** This Agreement is executed for commercial purposes. Owner shall supply information regarding Owner's business operations and financial condition or the Collateral in the form and manner as requested by Lender from time to time. All information furnished by Owner to Lender shall be true, accurate and complete in all respects. Owner and Lender agree that time is of the essence. Owner waives presentment, demand for payment, notice of dishonor and protest except as required by law. All references to Owner in this Agreement shall include all parties signing below. If there is more than one Owner, their obligations under this Agreement shall be joint and several. This Agreement shall remain in full force and effect until Lender provides Owner with written notice of termination. This Agreement represents the complete and integrated understanding between Owner and Lender regarding the terms hereof.

**31. WAIVER OF JURY TRIAL. LENDER AND OWNER HEREBY WAIVE ANY RIGHT TO A TRIAL BY JURY IN ANY CIVIL ACTION ARISING OUT OF, OR BASED UPON, THIS SECURITY AGREEMENT.**

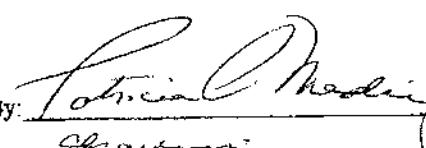
**32. OWNER WAIVES ANY RIGHT TO REQUIRE LENDER TO PROCEED AGAINST BORROWER.**

**33. AUTHORITY.** Each person signing this Agreement warrants that he is authorized to execute this Agreement on behalf of the entity he purports to represent and bind hereby, either pursuant to the by-laws of such entity or pursuant to the resolution of the board of directors or other governing body of such entity.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement and the OWNER has affixed its seal, acting in their individual capacities or through their duly authorized agents or officers, as the case may be, as of this \_\_\_\_\_ day of May, 1999.

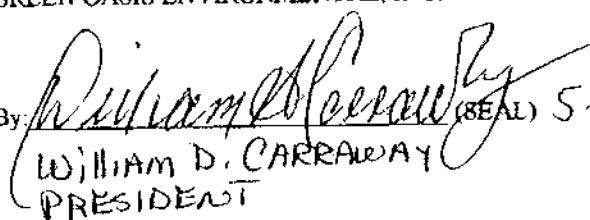
**SECURED PARTY:**

BALALLAN LIMITED

By:  (SEAL)  
Patricia Maday  
Chairwoman

**OWNER:**

GREEN OASIS ENVIRONMENTAL, INC.

By:  (SEAL) 5-26-99  
William D. CARRAWAY  
PRESIDENT

**DEMAND PROMISSORY NOTE**

\$100,000.00

Charleston, South Carolina  
May 25, 1999

**FOR VALUE RECEIVED**, the undersigned (herein referred to as "Maker") promises to pay on demand to the order of BALALLAN LIMITED (herein collectively referred to as "Payee") at its offices at 50 Broadway, Ste. 2300, New York, New York 10004, or at such other place as the holder hereof may designate, the principal sum of One Hundred Thousand Dollars (\$100,000.00), or so much of the principal balance of this Note as may be outstanding and unpaid from time to time, plus interest at the rate per annum of Twelve (12%) percent.

**Maker covenants and agrees with Payee the following:**

1. Maker will pay the indebtedness evidenced by this Note as provided herein.
2. Payment shall be delivered to Balallan Limited, 50 Broadway, Ste. 2300, New York, New York 10004 or such other address as Payee shall designate in writing.
3. Unless demand for payment is earlier made, all accrued interest plus any outstanding principal balance shall be due and payable on September 24, 1999.
4. This Note is secured by a Loan and Security Agreement and other related agreements between the undersigned (the "Transaction Documents"), pursuant to which this Demand Promissory Note has been made and delivered to Payee. All of the terms, covenants and conditions, contained in the Transaction Documents are expressly incorporated by reference herein and hereby made a part hereof. Any act of default by the undersigned under any of the Transaction Documents shall constitute a default under this Note.
5. Repayment of this Note is guaranteed by William D. Carraway. All of the terms, covenants and conditions, contained in the Guaranty attached hereto are expressly incorporated by reference herein and hereby made a part hereof.
6. In the event any payment due hereunder shall not be paid on the date when due, such payment shall bear interest at the lesser of eighteen (18%) percent per annum or the highest lawful rate permitted under applicable law, from the date when such payment was due until paid. This paragraph shall not be deemed to extend or otherwise modify or amend the date when such payments are due hereunder. The obligations of Maker under this Note are subject to the limitation that payments of interest shall not be required to the extent that the charging of or the receipt of any such payment by Payee would be contrary to the provisions of law applicable to Payee limiting the maximum rate of interest which may be charged or collected by Payee.
7. If any proceedings be instituted by or against Maker alleging that Maker is insolvent, unable to pay its debts as they mature, or not generally paying its debts as such debts become due; or if proceedings be instituted by or against Maker under the Federal Bankruptcy Code or any successor statute; or if any proceeding be instituted seeking the appointment of a receiver or trustee for all or any portion of Debtor's property; or if any proceeding affecting the rights of creditors generally be instituted by or against Maker, this Note without demand or notice of any kind, immediately shall become due and payable. This paragraph is in addition to and in no way is a limitation upon the other rights of Payee under this Note, any other instrument, or any of the Transaction Documents between Payee and Maker, or applicable law.
8. In case this Note is collected by or through an attorney-at-law, all costs of collection, including reasonable attorney's fees shall be paid by Maker.



9. Maker, and all guarantors, endorsers and sureties of this Note, hereby waive presentment for payment, demand, protest, notice of protest, notice of nonpayment, and notice of dishonor of this Note. Maker and all guarantors, endorsers and sureties consent that the holder of this Note at any time may extend the time of payment of all or any part of the indebtedness secured hereby, or may grant any other indulgences.

10. This Note may not be changed or terminated orally, but only an agreement in writing signed by the party against whom enforcement of any change, modification, termination, waiver, or discharge is sought. This Note shall be construed and enforced in accordance with the laws of New York. The undersigned hereby consents to the in personam jurisdiction of the courts of the State of New York. Wherever possible each provision of this Note shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Note shall be prohibited by or invalid under applicable law, such provisions shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this guaranty.

IN WITNESS WHEREOF Maker has caused this Demand Promissory Note to be duly executed and its seal affixed by its duly authorized officers, and has delivered this Note to Payee, on the date first above written.

GREEN OASIS ENVIRONMENTAL, INC.  
with a principal place of business at  
184 E. Bay Street, Ste. 302  
Charleston, S.C. 29401

By: WILLIAM D. CARRAWAY  
Title: PRESIDENT

Attest:

W.D. Carraway  
J.D. CARRAWAY, Asst. Secretary

(Corporate Seal)

ACCEPTANCE:

The foregoing guaranty is accepted in New York, New York this 26th day of May, 1999.

**BALALLAN LIMITED**

By: Patricia Thaeling

(CORPORATE SEAL)

1A. Debtor Name and Mailing Address: Green Oasis Environmental, Inc.

184 E. Bay Street, Ste. 302  
Charleston, SC 29401 Business (Legal Business Name)1B. Enter Social Security/Tax ID # 57-097-0282 1C.  Check if exempt under Item 61A. Debtor Name and Mailing Address:  Individual (Last, First, Middle Name)  
 Business (Legal Business Name)1B. Enter Social Security/Tax ID #  1C.  Check if exempt under Item 61A. Debtor Name and Mailing Address:  Individual (Last, First, Middle Name)  
 Business (Legal Business Name)1B. Enter Social Security/Tax ID #  1C.  Check if exempt under Item 61A. Secured Party Name and Mailing Address:  Individual (Last, First, Middle Name)  
 Business (Legal Business Name)Balalian Limited  
50 Broadway, Ste. 2300  
New York, NY 10004

## ABOVE SPACE FOR RECORDING INFORMATION ONLY

5. Assinee Name and Mailing Address:  Individual (Last, First, Middle Name)  
 Business (Legal Business Name)6. Exceptions for Social Security/Tax ID #  (O.C.G.A. 11-9-402(f)): Financing Statement filed to perfect a security interest in collateral already subject to a security interest in another jurisdiction when it is brought into this state or when the debtor's location is changed to this state, or the debtor is not required to have such a number.

7. Check Only if BOTH: (i) Collateral is consumer goods as defined in O.C.G.A. 11-9-109 and (ii) the secured obligation is originally \$5,000 or less, and give maturity date (MONTH/DAY/YEAR) or state "None".

8. Check ONLY if applicable.  
A.  Collateral on Consignment.  
B.  Collateral on Lease.

A. This financing statement covers the following types of items of collateral:

All of Debtor's now owned or existing and hereafter acquired or arising accounts, general intangibles, instruments and documents, and all books and records, in each case wheresoever located, together with all accessions to, substitutions for and replacement products, and proceeds of all the foregoing, as more particularly described on Exhibit A attached hereto and by this reference made a part hereof.

8C. Enter collateral codes from back of form that best describes collateral covered by this filing:

0100 0600  
0200 0700  
0300 0900  
0400 1000  
0500 13009.  Products of collateral are also covered9D. Number of additional sheets presented: 1

10. Check if applicable and include reasonable description of the real estate in Item 9A:

 Deeds crowding or to be drawn  Deeds or the like including oil and gas or accounts subject to O.C.G.A. 11-9-109(f)  Future filing pursuant to O.C.G.A. 11-9-613.

Name of the Record Owner(s) or Record Cessary(ies): Debtor does not have an interest or record in the real estate.

11. County or Counties in which the affected real estate is located (Must be identified if filing covers crops, mineral or fixtures):

12. This statement is filed without the debtor's signature to perfect a security interest in collateral (check one):  Not applicable Is already subject to a security interest in another jurisdiction when it was brought into this state or debtor's location changed to this state. Is a proceeds of the original collateral described above in which a security interest was perfected. Is to which the filing has leased. Is acquired after a change of debtor's name, center or corporate structure, or Is described in a security agreement / real estate mortgage attached hereto in accordance with O.C.G.A. 11-9-402(f).

13. Signature(s) of Debtor(s):

14. Signature(s) of Secured Party(ies):

Green Oasis Environmental, Inc.

Balalian Limited

William W. Clegg, Esq.Tatiana L. Frizzell  
Chavens

15. Return Copy To Name and Address:

Briskin & Rinde, L.C.  
1001 Cambridge Square, Ste. D  
Alpharetta, GA 30004

## STATE OF GEORGIA - FINANCING STATEMENT

UCC-1 (REVISED 1/1/1995)

FORM MUST BE TYPED.

READ INSTRUCTIONS ON BACK  
BEFORE FILLING OUT FORM.

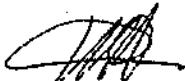
EXHIBIT A TO UCC-1 FINANCING STATEMENT

DEBTOR: GREEN OASIS ENVIRONMENTAL, INC.

SECURED PARTY: BALALLAN LIMITED

As collateral security for all obligations, Debtor hereby assigns and grants to Secured Party a continuing security interest in all of the following property, whether now owned by Debtor or hereafter created or acquired by Debtor or arising in Debtor's favor: (i) Accounts and contract rights (as defined in the Uniform Commercial Code ("UCC")); (ii) general intangibles (as defined in the UCC); (iii) chattel paper, documents, equipment, fixtures, instruments, and inventory (as those terms are defined in the UCC); (iv) furniture; (v) monies, securities, and other property now or hereafter held or received by, or in transit to Payee from or for Maker, whether for safekeeping, pledge, custody, transmission, collection, or otherwise, and all of Maker's deposits, reserves, and credit balances in Payee's possession; (vi) monies or instruments pertaining to any of the above; (vii) accessions, accessories, additions, amendments, attachments, modifications, replacements and substitutions to any of the above; (viii) components and supplies of any of the above; (ix) books, records and other property at any time evidencing or relating to any of the foregoing property; and (x) proceeds of any of the foregoing property including, without limitation, the proceeds of any insurance policies covering any of the foregoing property.

Accounts means all presently existing or outstanding and all hereafter created or acquired accounts (as that term is defined in the UCC), contract rights, documents, notes, drafts, instruments and other forms of obligations owed to or owned by Debtor arising or resulting from the sales of goods or the rendering of services by Debtor, all general intangibles relating thereto, all proceeds thereof, all guaranties and security therefor, and all goods and rights represented thereby or arising therefrom, including, by not limited to, returned, reclaimed and reposessed goods and the rights of stoppage in transit, replevin and reclamation.



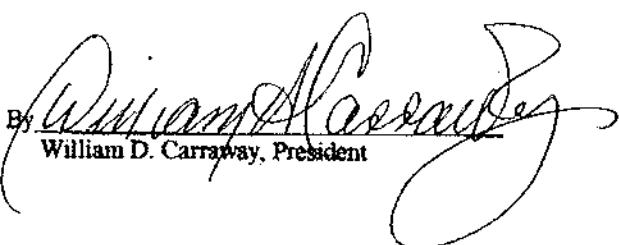
ASSIGNMENT OF CLAIM FOR DAMAGES

In exchange for value received, Green Oasis Environmental, Inc. ("GOEI"), with its principal place of business at 184 E. Bay Street, Suite 302, Charleston, South Carolina 29401, as assignor, assigns to BALALLAN LIMITED ("BALALLAN"), with its principal place of business at 50 Broadway, Ste. 2300, New York, New York 10004, as assignee, for its use and benefit, the first one hundred thousand (\$100,000.00) dollars (or such other lesser or greater sum as may be due and owing under the terms and conditions of that certain Demand Promissory Note dated May 25, 1999, executed by GOEI and payable to the order of BALALLAN) of any and all sums of money that are now due or owing to GOEI, or become due and owing to GOEI, as a result of or in any way related to that certain cause of action, Green Oasis Environmental, Inc. v. Gambrell & Stolt, LLP and Jon L. Anderson, pending in the United States District Court for the State of South Carolina, District of Charleston, South Carolina, Case No. 2:98-2478-23.

This assignment is without recourse, and GOEI does not guarantee payment of the claim assigned. GOEI agrees, however, that in the event any payment under the claim is made to GOEI, GOEI will promptly transmit such payment to GOEI.

Dated May 25, 1999.

GREEN OASIS ENVIRONMENTAL, INC.

By   
William D. Caraway, President

The 10-14 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket there. (SEE INSTRUCTIONS ON THE REVERSE OF THE FORM.)

## I (a) PLAINTIFFS

WILLIAM D. CARRAWAY, MARY ANN CARRAWAY;  
JESSICA DEES, and GREEN OASIS  
ENVIRONMENTAL, INC.

## DEFENDANTS

GAMBRELL & STOLZ, L.L.P. and  
JON L. ANDERSEN.

(b) COUNTY OF RESIDENCE OF FIRST LISTED PLAINTIFF Georgetown  
(EXCEPT IN U.S. PLAINTIFF CASES)

STATE OF  
Georgia  
COUNTY OF RESIDENCE OF FIRST LISTED DEFENDANT  
(IN U.S. PLAINTIFF CASES ONLY)  
NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE  
TRACT OF LAND INVOLVED

## (c) ATTORNEYS (FIRM NAME, ADDRESS, AND TELEPHONE NUMBER)

Robert Bartley Turner, Esq.  
Savage, Herndon & Turner, P.C.  
Post Office Box 8969  
Savannah, GA 31412  
(912) 231-1140

ATTORNEYS (IF KNOWN) UNKNOWN

Ken W. Harrell & Christopher J. McCool  
JOYE LAW FIRM  
5861 Rivers Avenue  
N. Charleston, SC 29402 (843) 554-3100

## II. BASIS OF JURISDICTION

(PLACE AN X IN ONE BOX ONLY)

1 U.S. Government Plaintiff

3 Federal Question  
(U.S. Government Not a Party)

2 U.S. Government Defendant

4 Diversity  
(Indicate Citizenship of  
Parties in Item III)

AND

## III. CITIZENSHIP OF PRINCIPAL PARTIES

(For Diversity Cases Only)

(PLACE AN X IN ONE BOX ONLY  
FOR PLAINTIFF AND ONE BOX FOR DEFENDANT)

Citizen of This State  1  2 PTF DEF

Incorporated or Principal Place  
of Business in This State

3  4 PTF DEF

Citizen of Another State  2  3 PTF DEF

Incorporated and Principal Place  
of Business in Another State

5  6 PTF DEF

Citizen or Subject of a  
Foreign Country  3  4 PTF DEF

Foreign Nation

6  7 PTF DEF

## IV. CAUSE OF ACTION

(CITE THE U.S. CIVIL STATUTE UNDER WHICH YOU ARE FILING AND WRITE A BRIEF STATEMENT OF CAUSE)

DO NOT CITE JURISDICTIONAL STATUTES UNLESS DIVERSITY Breach of Contract; Negligence; Fraud; Unfair Trade Practices

## V. NATURE OF SUIT (PLACE AN X IN ONE BOX ONLY)

CONTRACT	TORTS	FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
<input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Water Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment & Enforcement of Assignment <input type="checkbox"/> 151 Motorcar Act <input type="checkbox"/> 152 Recovery of Damages - Student Loans (if not Veterans) <input type="checkbox"/> 153 Recovery of Compensation of Veterans' Benefits <input type="checkbox"/> 160 Stockholders Suits <input checked="" type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability	<b>PERSONAL INJURY</b> <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault, Libel & Slander <input type="checkbox"/> 330 Federal Employers' Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Motor Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury	<b>PERSONAL INJURY</b> <input type="checkbox"/> 362 Personal Injury - Med Malpractice <input type="checkbox"/> 365 Personal Injury - Product Liability <input type="checkbox"/> 368 Asbestos Personal Injury Product Liability	<input type="checkbox"/> 510 Agriculture <input type="checkbox"/> 620 Other Food & Drug <input type="checkbox"/> 625 Drug Related Seizure of Property 21 USC 881 <input type="checkbox"/> 630 Liquor Laws <input type="checkbox"/> 640 R.R. & Truck <input type="checkbox"/> 650 Aeron. Regs <input type="checkbox"/> 660 Occupational Safety/Health <input type="checkbox"/> 690 Other	<input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157 <b>PROPERTY RIGHTS</b> <input type="checkbox"/> 820 Copyrights <input type="checkbox"/> 830 Patents <input type="checkbox"/> 840 Trademarks <b>SOCIAL SECURITY</b> <input type="checkbox"/> 861 FIA (1935) <input type="checkbox"/> 862 Black Lung (1972) <input type="checkbox"/> 863 OWC/OWW (405(g)) <input type="checkbox"/> 864 SSID-Tire XVI <input type="checkbox"/> 865 ASI (405(g))
REAL PROPERTY	<b>CIVIL RIGHTS</b>	<b>PRISONER PETITIONS</b>		
<input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Title to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	<input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/ Accommodations <input type="checkbox"/> 444 Welfare <input type="checkbox"/> 446 Other Civil Rights	<input type="checkbox"/> 510 Motions to Vacate Sentence Habeas Corpus: <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Other	<input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Mgmt. Relations <input type="checkbox"/> 730 Labor/Mgmt. Reporting & Disclosure Act <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 790 Other Labor Legislation <input type="checkbox"/> 791 Emp. Ret. Inc. Security Act	<b>FEDERAL TAX SUITS</b> <input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS - Third Party 26 USC 7603
				<input type="checkbox"/> 891 Emergency Allocation Act <input type="checkbox"/> 892 Economic Stabilization Act <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 894 Energy Allocation Act <input type="checkbox"/> 895 Freedom of Information Act <input type="checkbox"/> 900 Appeal of Fee Determination Under Equal Access to Justice <input type="checkbox"/> 950 Constitutionality of State Statutes <input type="checkbox"/> 890 Other Statutory Actions

## VI. ORIGIN

(PLACE AN X IN ONE BOX ONLY)

1 Original Proceeding  2 Removed from State Court  3 Remanded from Appellate Court  4 Reinstated or Reopened  5 another district (specify)  6 Multidistrict Litigation

Appeal to District

7 Judge from Magistrate Judgment

## VII. REQUESTED IN COMPLAINT

CHECK IF THIS IS A CLASS ACTION  
□ UNDER F.R.C.P. 23

DEMAND \$

Check YES only if demanded in complaint:  
JURY DEMAND:  YES  NO

VIII. RELATED CASE(S) (See instructions):  
IF ANY

JUDGE \_\_\_\_\_ DOCKET NUMBER \_\_\_\_\_

DATE

SIGNATURE OF ATTORNEY OF RECORD

GUARANTY

STATE OF SOUTH CAROLINA

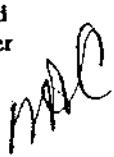
COUNTY OF CHARLESTON

May 25, 1999

In consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by the undersigned, and to induce BALALLAN LIMITED, a New York corporation, with a principal place of business at 50 Broadway, Suite 2300, New York, New York 10004 (hereinafter collectively referred to as "Lender") to make loans or otherwise extend credit to Green Oasis Environmental, Inc. (hereinafter referred to as "Borrower") and/or to renew or extend in whole or in part any indebtedness of Borrower to Lender, or to make other financial accommodations to Borrower, which extension of loans and financial accommodations to Borrower will be of direct financial benefit to the undersigned, jointly and severally, do hereby unconditionally guarantee to Lender and to its endorsers, transferees, successors and assigns, of either this guaranty or any of the obligations secured hereby, the prompt payment and performance according to their terms of all obligations (as hereinafter defined) of Borrower to the Lender of any kind or character, and do agree that if such obligations, or any of them, are not performed or paid by the Borrower, the undersigned will immediately do so.

The undersigned hereby unconditionally and irrevocably guarantees to the Lender the full and punctual payment, when due, whether by acceleration or otherwise, of: (a) the unpaid principal balance of the indebtedness evidenced by all obligations (as hereinafter defined) as of the date of computation, plus (b) all accrued and unpaid interest thereon, plus (c) all expenses, costs, and charges permitted to be charged by the Lender to the Borrower pursuant to the terms of the Promissory Note dated May 25, 1999 between Borrower and Lender (the "Note") (the amounts described in clauses (a), (b), and (c) of this sentence being hereinafter referred to collectively as the "Indebtedness"). The term "Indebtedness" also includes any payments made by the Borrower to the Lender and subsequently recovered by the Borrower or a trustee for the Borrower or a trustee for the Borrower pursuant to the Borrower's bankruptcy or insolvency, subject to the limitations set forth in the preceding sentences of this paragraph. The guaranty of the undersigned as set forth in this section is an absolute, continuing, unconditional guaranty of payment and not of collection. This guaranty is absolute, unconditional and continuing, regardless of the validity, regularity, or enforceability of any of the obligations covered by this guaranty or the fact that a security interest or lien or any collateral or security therefor may not be enforceable by Lender or may otherwise be subject to equities or defenses or prior claims in favor of others or may be invalid or defective in any way and for any reason, including any action, or failure to act, on Lender's part. This guaranty shall remain in force and effect, whether or not Borrower changes its status, ownership, composition, personnel, name or location. Notwithstanding the foregoing provisions of this paragraph, the undersigned shall be fully liable to Lender for any fraud, misrepresentation, or misappropriation or misapplication of funds.

The obligations covered by this guaranty include all obligations of the Borrower to the Lender now existing or hereafter coming into existence, including but not limited to all obligations of Borrower to Lender arising under or pertaining to: any loan agreement, security agreement, instrument of lien, security deed or other security device; any promissory note, loans, advances, over-advances, and/or accounts; any and all other indebtedness and obligations of Borrower to Lender however evidenced or arising whether direct, indirect or by way of assignment, whether joint or several, absolute or contingent, or due or to become due; and any renewals, extensions, or modifications, in whole or in part of any of the obligations heretofore described, together with all damages, losses, costs, interest, charges, expenses and liabilities of every kind, nature and description suffered or incurred by the Lender, arising in any manner



out of or in any way connected with, or growing out of said obligations of the Borrower to the Lender. Lender shall not be liable for failure to collect obligations covered by this guaranty or to realize upon any collateral or security therefore, or any part thereof or for any delay in so doing, nor shall Lender be under any obligation to take any action whatsoever with regard thereto.

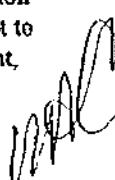
Nothing herein contained shall obligate Lender to grant credit to, or continue Lender's financing arrangements with Borrower. This guaranty may not be terminated so long as any obligations of Borrower to Lender are outstanding and unpaid. This guaranty shall be continuing, irrevocable and shall bind and inure to the benefit of the respective heirs, legal representatives, successors and assigns of Guarantor(s), and to Lender's successors and assigns. This Guaranty shall be revived and reinstated in the event that any payment received by Lender, or any of Lender's successors and assigns, endorsers or transferees, on any of the obligations, is required to be repaid or rescinded under present or future federal or state law or regulation relative to bankruptcy, insolvency, or other relief of debtors, to the same extent as if such payment had never been made, and the amount of such payment and interest thereon shall be part of the obligations guaranteed hereby.

This guaranty shall be effective regardless of the solvency or insolvency of Borrower, the dissolution of Borrower, the institution by or against Borrower of any proceeding under the Federal Bankruptcy Code, any reorganization, merger or consolidation of Borrower, or any change in the ownership, composition, or nature of Borrower.

In the event any proceeding is instituted by or against Borrower under the Federal Bankruptcy Code or any other bankruptcy, insolvency or moratorium law, as between the undersigned and Lender, all of the obligations shall be immediately due and payable, without notice and demand of any kind, and the undersigned agree immediately to pay the obligations in full, irrespective of whether the obligations can be accelerated against Borrower and irrespective of any right which Borrower may have under any bankruptcy, insolvency or moratorium law to cure defaults and reinstate the maturities of the obligations.

The undersigned hereby consent and agree that the Lender may at any time, either with or without consideration, surrender any property or other security of any kind or nature whatsoever held by it or by any person, firm or corporation in its behalf or for its account securing any of the obligations covered by this guaranty, or substitute any collateral so held by it for other collateral of like kind or of any kind without notice to or further consent from undersigned and such surrender or substitution shall not in any way affect the liability of the undersigned hereunder. The undersigned shall not be discharged from his, her, or their obligations and undertakings hereunder in the event the Lender releases or agrees not to sue any person against whom the undersigned has, to the knowledge of the Lender, a right of recourse or should the Lender agree to suspend the right to enforce the Note signed by the Borrower, or a guaranty given by any other person, or Lender's interest in the collateral given by Borrower to secure loans made by the Lender. Lender shall be under no duty to exercise all or any rights and remedies given by any note or agreement signed by Borrower, nor given by any other guaranty given to the Lender to secure Borrower's indebtedness to Lender, as a condition or requirement of enforcing this guaranty.

The undersigned waives notice of: the creation of any of the obligations, notice of nonpayment or default by Borrower under any of the obligations or under any agreement now or hereafter existing between Borrower and Lender; notice of presentment, demand, notice of dishonor, protest, notice of acceptance of this guaranty or the creation or extension or renewal of any obligation of the Borrower to which this guaranty relates; and any other notices whatever, and agrees that no modification of any of the obligations (including the release of any of the undersigned), or of any collateral security given by Borrower shall affect, impair or release the undersigned from any of the indebtedness then accrued or thereafter to accrue under this guaranty or any part hereof. In the event any claim hereunder is collected by law or through an attorney-at-law, the undersigned shall be liable to Lender for all costs of collection including reasonable attorney's fees. The undersigned hereby expressly waive, renounce and agree not to assert, any right, any claim or cause of action, including, without limitation, a claim for reimbursement, subrogation, indemnification or otherwise, against the Borrower arising out of or by reason of this



instrument or the obligations of the undersigned hereunder, including, without limitation, the payment or securing of purchasing of any of the obligations by the undersigned. The waiver, renunciation and agreement contained in the preceding sentence is for the benefit of Lender and also for the benefit of the Borrower, who may assert the benefits thereof as a third party beneficiary, and the undersigned may be released from such waiver, renunciation and agreement only by the execution and delivery, by the Lender and Borrower, of any instrument expressly releasing the undersigned therefrom.

The undersigned agrees that no act or omission on the part of the Lender shall in any way affect or impair this guaranty. The undersigned hereby waives the right to require the holder of the obligations guaranteed to take action against the principal. At the option of the Lender this may be treated as a guaranty or as a suretyship, with the right to proceed against the undersigned without first proceeding against the Borrower.

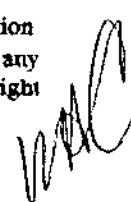
This guaranty is made subject to all the terms, conditions, agreements, or stipulations contained in the Note, agreements, instruments and other documents evidencing the obligations hereby guaranteed, which are hereby expressly incorporated herein, and the undersigned agrees that the terms, conditions and provisions of any Note, agreements, instruments or other documents which may be executed by the Borrower to evidence such obligations in the future shall simultaneously with their execution, become a part of this guaranty.

The liability of the undersigned shall not be modified in any manner whatsoever by any extension that may be granted to Borrower by any court in any proceeding under the Bankruptcy Act or any amendments thereof and the undersigned expressly waives the benefit of any such extension.

It is especially and expressly agreed if the indebtedness of said Borrower now or at any time hereafter exceeds the amount permitted by law, or said Borrower is not liable because the act of creating the obligation is ultra vires, or the officers creating same acted without authority, and for these reasons the indebtedness to Lender which the undersigned agreed to pay cannot be enforced against the Borrower, such facts shall in no manner affect the liability of the undersigned hereunder, notwithstanding said Borrower is not liable for such indebtedness, unto the same extent as the undersigned would have been liable if the indebtedness of the said Borrower had been enforceable against it.

It being the express intention of the parties hereto to conform strictly with the applicable usury laws, it is agreed that nothing contained herein shall be construed as to require the payment of interest at a rate in excess of the maximum allowable by law, and in no event shall the undersigned be obligated to pay interest exceeding such maximum rate of interest permitted by law, and all such agreements, conditions, or stipulations, if any, which may in any event or contingency whatsoever operate to bind, obligate, or compel the undersigned to pay a rate of interest exceeding the maximum rate of interest permitted by law shall be without binding force or effect at law or in equity only of the excess of interest over such maximum rate of interest permitted by law. It is the intention of the parties hereto that in the construction and interpretation of this guaranty, the foregoing sentence shall be given precedence over any other agreement, condition, or stipulation herein contained which is in conflict with the same.

No act of Lender's part and nothing other than the full payment, performance and discharge of all aforementioned indebtedness and obligations of Borrower shall operate or discharge or satisfy the liability of the undersigned hereunder. Lender's accounting records of any transactions with Borrower shall be admissible in evidence in any action or proceeding, and shall be binding upon the undersigned in establishing transactions and entries reflected therein, and shall be accepted as *prima facie* proof thereof. In the event any claim or action, or action on any judgment, based on this guaranty, is made or brought against the undersigned, the undersigned agree not to deduct any setoff or seek to counterclaim for or recoup, any amounts which are or may be owed by Lender to undersigned, or for any loss of contribution from any other guarantor. Furthermore, in any litigation based on this guaranty in which Lender and any of the undersigned shall be adverse parties, the undersigned hereby waive trial by jury and waive the right to interpose any defense based upon any statutes of limitations or any claim of laches and waive the



performance of each and every condition precedent to which the undersigned might otherwise be entitled by law.

In the event of any breach, default under termination of any of the agreements between Lender and Borrower, or in the event that the undersigned shall fail to observe or perform any agreements, warranties, or covenants contained herein, or upon the death of any of the undersigned, or should any of the undersigned dissolve or cease its business, call a meeting of its creditors, fail to meet its debts as they mature, commit an act of bankruptcy, insolvency, arrangement, reorganization, receivership or similar proceeding under any federal or state law, then the liability of all of the undersigned for the entire obligations covered by this guaranty shall mature even if the liability of the Borrower therefore does not.

The undersigned and each of them waive and renounce each for himself and family any and all homestead of exemption right either of them may have under or by virtue of the constitution or laws of South Carolina, any other State, or the United States, against the liabilities and obligation hereby created, and do and do hereby jointly and severally transfer, convey and assign to the Lender or holder hereof a sufficient amount of any homestead or exemption that may be allowed to the undersigned, or of any of the, including such homestead or exemption that may be set apart in bankruptcy to pay this obligation in full, with all costs of collection; and each of the undersigned hereby directs the trustee in bankruptcy having possession of such homestead or exemption to deliver the Lender a sufficient amount of property to set apart as exempt to pay the obligation hereby created.

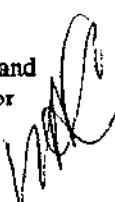
Where the obligation of Borrower hereby guaranteed is an obligation of a corporation, this guaranty is to cover all obligations to the Lender purporting to be made in behalf of Borrower by an officer or agent of Borrower without regard to the actual authority of such officer or agent. The term corporation or Borrower shall include associations of all kinds and all purported corporations whether correctly and legally chartered and organized or not. Where the undersigned is a natural person this agreement binds his heirs, administrators and executors, and where a corporation, its successors and assigns.

Where the obligation of Borrower hereby guaranteed is an obligation of an individual, such individual's undersigned spouse, if any, hereby unconditionally guarantees that the liability of the undersigned spouse shall be equal to the obligation of Borrower from time to time as hereinabove described. Such spouse hereby acknowledges and agrees that without said unconditional guarantee by the undersigned spouse, Lender would not have extended credit to Borrower, that Lender's extension of credit to Borrower is a direct economic benefit to said undersigned spouse and that the Lender's extension of credit to Borrower as set forth herein shall be good, valuable and sufficient consideration for such spouse's guarantee of Borrower's obligation of Lender hereunder.

The word "Lender" as herein used shall include transferees, assigns and successors of Lender, and all rights of Lender hereunder shall inure to the benefit of its transferees, successors and assigns.

The words importing the singular number hereunder shall include the plural number and vice versa and any pronouns used herein shall be deemed to cover all genders. Without limiting the generality of the foregoing, if more than one person executes this guaranty, the words "undersigned", "his", and "him" as used herein shall include all persons collectively and such each person individually, and all such persons shall be jointly and severally liable hereunder. "Person" as used herein means individual, corporation, partnership, joint venture, association, joint stock company, trusts, unincorporated associated, government or any agency or political subdivision thereof.

No termination hereof shall be effected by death of any or all if the undersigned. In the event of the death of any of the undersigned, his obligations hereunder shall continue in full force and effect against his estate to all indebtedness and obligations which shall have been created or incurred by Borrower prior to the time when Lender shall have actually received notice, in writing, of such death; and this guaranty shall, from the date of such death as to all indebtedness or obligations created, incurred or arising after such death remain in full force as a guaranty by the surviving undersigned.



Notwithstanding any provision in this Guaranty to the contrary, the aggregate dollar amount of the Guarantor's liability under this Guaranty shall be limited to the largest dollar amount which would render the obligations of the Guarantor hereunder subject to avoidance under Section 548 or any other section of the Federal Bankruptcy Code, or subject to being set aside under any applicable state fraudulent conveyance law.

This guaranty embodies the whole agreement of the parties and may not be modified except in writing, and no course of dealing between Lender and any of the undersigned shall be effective to change or modify this guaranty. Lender's failure to exercise any right hereunder shall not be construed as a waiver of the right to exercise the same or any other right at any other time and from time to time thereafter, and such rights shall be considered as cumulative rather than alternative. No knowledge of any breach or other nonobservance by any of the undersigned of the terms and provisions of this guaranty shall constitute a waiver thereof, nor a waiver of any obligations to be performed by the undersigned hereunder. The undersigned agrees that this guaranty shall be governed by and construed and enforced according to the laws of the State of New York. The undersigned hereby consent to the in personam jurisdiction of the courts of the State of New York. Wherever possible each provision of this guaranty shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this guaranty shall be prohibited by or invalid under applicable law, such provisions shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this guaranty.

IN WITNESS WHEREOF, the guarantor, intending to be legally bound hereby, as hereinabove described, has signed and sealed this guaranty, this \_\_\_\_\_th day of May, 1999, at Charleston, South Carolina.

Witnessed:

Linda Johnson

By: William D. Carraway 5-26-99  
William D. Carraway (Individually)



## SECURITY AGREEMENT

Date of Agreement: May 25, 1999

Name of Owner: GREEN OASIS ENVIRONMENTAL, INC.

Address of Debtor: 184 E. Bay Street  
Suite 302  
Charleston, S.C. 29401

Name of Borrower: GREEN OASIS ENVIRONMENTAL, INC.

Address of Borrower: 184 E. Bay Street  
Suite 302  
Charleston, S.C. 29401

Name of Lender: BALALLAN LIMITED

Address of Lender: 50 Broadway  
Suite 2300  
New York, New York 10004

**1. SECURITY INTEREST.** For good and valuable consideration, Owner grants to Lender identified above a continuing security interest in the Collateral described below to secure the Obligations described in this Agreement.

**2. SECURED OBLIGATIONS.** The security interest granted secures the payment and performance of any and all liabilities, obligations, agreements and undertakings of Borrower (or any one or more of them) and Owner (or any one or more of them) to Lender, in any amount, whether now existing or hereafter arising (including those owed by Borrower or Owner to others and acquired by Lender through purchase, assignment or otherwise), however created, evidenced or arising, whether individually or jointly with others and whether absolute or contingent, direct or indirect, as maker, endorser, guarantor, surety or otherwise, liquidated or unliquidated, matured or unmatured, whether or not secured by other collateral, and including, without limitation (a) all obligations to perform or forebear from performing any acts, and (b) all overdrafts on deposits or accounts maintained by Borrower or Owner with Lender, and (c) the liabilities, obligations, agreements and undertakings of Borrower or Owner to reimburse Lender for all amounts funded by Lender pursuant to any such letter of credit, and (d) all costs and fees for filing and recording documentation, all costs incurred in the collection or enforcement of this Agreement, including attorneys' fees and legal expenses, including all appeals, whether or not a lawsuit is instituted and whether or not such collection or enforcement occurs before or after any bankruptcy proceeding is filed by or against any Borrower or Owner (all of which are collectively referred to as the "Obligations").

**3. COLLATERAL.** All of Owner's right, title and interest in the following described property whether now or hereafter existing or now owned or hereafter acquired by Owner and wherever located shall constitute the "Collateral":

- (a) Accounts and contract rights (as defined in the UCC);
- (b) general intangibles (as defined in the UCC);
- (c) chattel paper, documents, equipment, fixtures, instruments, and inventory (as those terms are defined in the UCC);
- (d) furniture;



- (e) monies, securities, and other property now or hereafter held or received by, or in transit to Payee from or for Maker, whether for safekeeping, pledge, custody, transmission, collection, or otherwise, and all of Maker's deposits, reserves, and credit balances in Payee's possession;
- (f) monies or instruments pertaining to any of the above;
- (g) accessions, accessories, additions, amendments, attachments, modifications, replacements and substitutions to any of the above;
- (h) components and supplies of any of the above;
- (i) books, records and other property at any time evidencing or relating to any of the foregoing property; and
- (j) proceeds of any of the foregoing property including, without limitation, the proceeds of any insurance policies covering any of the foregoing property.

**4. OWNER'S TAXPAYER IDENTIFICATION.** Owner's federal taxpayer identification number is 57-0970282.

**5. RESIDENCY/LEGAL STATUS.** Owner is a Corporation duly organized, validly existing and in good standing under the laws of the state of Florida.

**6. REPRESENTATIONS, WARRANTIES, AND COVENANTS.** Owner represents, warrants and covenants to Lender that:

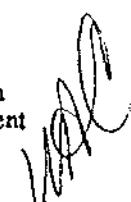
- (a) Owner is and shall remain the sole owner of the Collateral;
- (b) Neither Owner, nor, to the best of Owner's knowledge, any other party has used, generated, released, discharged, stored, or disposed of any hazardous waste, toxic substance, or related material or transported any such material except as allowed by and in accordance with applicable federal, state and local law and regulation. Owner shall not commit or permit such actions to be taken in the future. The term "Hazardous Materials" shall mean any substance, material, or waste which is or becomes regulated by any governmental authority including, but not limited to, (i) petroleum; (ii) asbestos; (iii) polychlorinated biphenyls; (iv) those substances, materials or wastes designated as a "hazardous material" pursuant Section 311 of the Clean Water Act or listed pursuant to Section 307 of the Clean Water Act or any amendments or replacements to these statutes; (v) those substances, materials or wastes defined as a "hazardous substance" pursuant to Section 101 of the Comprehensive Environmental Response, Compensation and Liability Act or any amendments or replacements to that statute. Owner is in compliance in all respects with all applicable federal, state and local laws and regulations, including, without limitation, those relating to "Hazardous Materials", as defined herein, and other environmental matters (the "Environmental Laws") and neither the federal government nor any other government or quasi governmental entity has filed a lien of the Collateral, nor are there any pending or threatened governmental, judicial or administrative actions with respect to environmental matters, which involve the Collateral;
- (c) Owner's chief executive office, chief place of business, office where its business records relating to the Collateral, or residence is the address identified above. Owner shall immediately advise Lender in writing of any change in or addition to the foregoing addresses;
- (d) Owner shall not become a party to any restructuring of its form of business or participate in any consolidation, merger, liquidation or dissolution without Lender's prior written consent;
- (e) Owner shall notify Lender of the nature of any intended change of Owner's name, or the use of an trade name, and the effective date of such change;
- (f) The Collateral is and shall at all times remain free of all tax and other liens, security interests, encumbrances and claims of any kind except for those belonging to Lender. Without Lender waiving the Event of Default as a result thereof, Owner shall take any action and execute any

document needed to discharge any liens, security interests, encumbrances and claims against the Collateral;

- (g) Owner shall defend the Collateral against all claims and demands of all persons at any time claiming any interest therein;
- (h) All of the goods, fixtures, minerals or the like, and standing timber constituting the Collateral is and shall be located at Owner's executive offices, places of business, residence and domiciles specifically described in this Agreement. Owner shall not change the location of any Collateral without the prior written consent of Lender;
- (i) Owner shall provide Lender with possession of all chattel paper and instruments constituting the Collateral, and Owner shall promptly mark all chattel paper, instruments, and documents constituting the Collateral to show that the same are subject to Lender's security interest;
- (j) All of Owner's accounts or contract rights; chattel paper, documents, general intangibles, instruments; and federal, state, county, and municipal government and other permits and licenses; trusts, liens, contracts, leases, and agreements constituting the Collateral are and shall be valid, genuine and legally enforceable obligations and rights belonging to Owner against one or more third parties and not subject to any claim, defense, set-off or counterclaim of any kind;
- (k) Owner shall not amend, modify, replace, or substitute any account or contract right; chattel paper, document, general intangible, or instrument constituting the Collateral without the prior written consent of Lender;
- (l) Owner has the right and is duly authorized to enter into and perform its obligations under this Agreement. Owner's execution and performance of these obligations do not and shall not conflict with the provisions of any statute, regulation, ordinance, rule of law, contract or other agreement which may now or hereafter be binding on Owner;
- (m) No action or proceeding is pending against Owner which might result in any material or adverse change in its business operations or financial condition or materially affect the Collateral;
- (n) Owner has not violated and shall not violate any applicable federal, state, county or municipal statute, regulation or ordinance (including but not limited to those governing Hazardous Materials) which may materially and adversely affect its business operations or financial condition of the Collateral;
- (o) Owner shall, upon Lender's request, deposit all proceeds of the Collateral into an account or accounts maintained by Owner or Lender at Lender's institution;
- (p) Owner will, upon receipt, deliver to Lender as additional Collateral all securities distributed on account of the Collateral such as stock dividends and securities resulting from stock splits, reorganizations and recapitalizations;
- (q) Owner agrees to the terms of the Obligations and to the terms of any renewals, extensions, amendments, modifications, replacements or substitutions of the Obligations;
- (r) Owner agrees Lender may enter into agreements in the future with Borrower which, if this Agreement so provides, will become Obligations secured by the Collateral described in this Agreement;
- (s) Owner agrees property other than the Collateral may also secure the Obligations; Lender shall have no obligation to exercise its rights against such property prior to exercising its rights against the Collateral; Lender may accept substitutions or exchanges for any such property; Lender may release its security interest in such property at any time; and parties other than Borrower may be or may become obligated under the Obligations; and
- (t) This Agreement and the obligations described in this Agreement are executed and incurred for business and not consumer purposes.

**7. SALE OF COLLATERAL.** Owner shall not assign, convey, lease, sell or transfer any of the Collateral to any third party without the prior written consent of Lender except for sales of inventory to buyers in the ordinary course of business.

**8. FINANCING STATEMENTS AND OTHER DOCUMENTS.** Owner shall at any time and from time to time take all actions and execute all documents required by Lender to attach, perfect and maintain Lender's security interest in the Collateral and establish and maintain Lender's right to receive the payment



of the proceeds of the Collateral including, but not limited to, executing any financing statements, fixture filings, continuation statements, notices of security interest and other documents required by the Uniform Commercial Code and other applicable law. Owner shall pay the costs of filing such documents in all offices wherever filing or recording is deemed by Lender to be necessary or desirable. Owner authorizes Lender to execute and file any financing statements, as well as extensions, renewals and amendments of financing statements in such form as Lender may require to perfect and maintain perfection of any security interest granted in this Agreement.

**9. INQUIRIES AND NOTIFICATION TO THIRD PARTIES.** Owner hereby authorizes Lender to contact any third party and make any inquiry pertaining to Owner's financial condition or the Collateral. In addition, Lender is authorized to provide oral or written notice of its security interest in the Collateral to any third party.

**10. LOCK BOX, COLLATERAL ACCOUNT.** If Lender so requests at any time (whether or not Owner is in default of this Agreement), Owner will direct each of its account debtors to make payments due under the relevant account or chattel paper directly to a special lock box to be under the control of Lender. Owner hereby authorizes and directs Lender to deposit into a special collateral account to be established and maintained with Lender all checks, drafts and cash payments received in the lock box. All deposits in the collateral account shall constitute proceeds of Collateral and shall not constitute payment of any Obligation. At its option, Lender may, at any time, apply finally collected funds on deposit in the collateral account to the payment of the Obligations in such order of application as Lender may determine, or permit Owner to withdraw all or any part of the balance on deposit into the collateral account, all payments on accounts and chattel paper received by Owner. All such payments shall be delivered to Lender in the form received (except for Owner's endorsement if necessary). Until so deposited, all payments on accounts and chattel paper received by Owner shall be held in trust by Owner for and as the property of Lender and shall not be commingled with any funds or property of Owner.

**11. COLLECTION OF INDEBTEDNESS FROM THIRD PARTIES.** Lender shall be entitled to notify, and upon the request of Lender, Owner shall notify any account debtor or other third party (including, but not limited to, insurance companies) to pay any indebtedness or obligation owing to Owner and constituting the Collateral (collectively "Indebtedness") to Lender whether or not a default exists under this Agreement. Owner shall diligently collect the Indebtedness owing to Owner from its account debtors and other third parties until the giving of such notification. In the event that Owner possesses or receives possession of any instruments or other remittances with respect to the Indebtedness following the giving of such notification or if the instruments or other remittances constitute the prepayment of any Indebtedness or the payment of any insurance proceeds, Owner shall hold such instruments and other remittances in trust for Lender apart from its other property, endorse the instruments and other remittances to Lender, and immediately provide Lender with possession of the instruments and other remittances. Lender shall be entitled, but not required, to collect (by legal proceedings or otherwise), extend the time for payment, compromise, exchange or release any obligor or collateral, or otherwise settle any of the Indebtedness whether or not an Event of Default exists under this Agreement. Lender shall not be liable to Owner for any action, error, mistake, omission or delay pertaining to the actions described in this paragraph or any damages resulting therefrom.

**12. POWER OF ATTORNEY.** Owner hereby appoints Lender as its attorney-in-fact to endorse Owner's name on all instruments and other remittances payable to Owner with respect to the Indebtedness, including any items received by Lender in any lock box account, or other documents pertaining to Lender's actions in connection with the Indebtedness. In addition, Lender shall be entitled, but not required, to perform any action or execute any document required to be taken or executed by Owner under this Agreement. Lender's performance of such action or execution of such documents shall not relieve Owner from any obligation or cure any default under this Agreement. The powers of attorney described in this paragraph are coupled with an interest and are irrevocable.

**13. USE AND MAINTENANCE OF COLLATERAL.** Owner shall use the Collateral solely in the ordinary course of its business, for the usual purposes intended by the manufacturer (if applicable), with due care, and in compliance with all applicable laws, ordinances, regulations, requirements and rules of all



federal, state, county and municipal authorities including environmental laws and regulations and insurance policies. Owner shall not make any alterations, additions or improvements to the Collateral without the prior written consent of Lender. Owner shall ensure that Collateral which is not now a fixture does not become a fixture. Without limiting the foregoing, all alterations, additions and improvements made to the Collateral shall be subject to the security interest belonging to Lender, shall not be removed without the prior written consent of the Lender, and shall be made at Owner's sole expense. Owner shall take all actions and make any repairs or replacements needed to maintain the Collateral in good condition and working order.

**14. LOSS OR DAMAGE.** Owner shall bear the entire risk of any loss, theft, destruction or damage (collectively "Loss or Damage") to all or any part of the Collateral. In the event of any Loss or Damage, Owner will either restore the Collateral to its previous condition, replace the Collateral with similar property acceptable to Lender in its sole discretion, or pay or cause to be paid to Lender the decrease in the fair market value of the affected Collateral.

**15. INSURANCE.** The Collateral will be kept insured for its full value against all hazards including loss or damage caused by fire, collision, theft or other casualty. If the Collateral consists of a motor vehicle, Owner will obtain comprehensive and collision coverage in amounts at least equal to the actual cash value of the vehicle. Insurance coverage obtained by Owner shall be from a licensed insurer subject to Lender's approval. The insurance policies shall require the insurance company to provide Lender with at least thirty (30) days' written notice before such policies are altered or cancelled in any manner. In the event Owner fails to acquire or maintain insurance, Lender (after providing notice as may be required by law) may in its discretion procure appropriate insurance coverage upon the Collateral and charge the insurance cost as an advance of principal under the promissory note. Owner shall furnish Lender with evidence of insurance indicating the required coverage. Lender may act as attorney-in-fact for Owner in making and settling claims under insurance policies, canceling any policy or endorsing Owner's name on any draft or negotiable instrument drawn by any insurer.

**16. INDEMNIFICATION.** Lender shall not assume or be responsible for the performance of any of Owner's obligations with respect to the Collateral under any circumstances. Owner shall immediately provide Lender with written notice of and hereby indemnifies and holds Lender and its shareholders, directors, officers, employees and agents harmless from all claims, damages, liabilities (including attorneys' fees and legal expenses), causes of action, actions, suits and other legal proceedings (collectively "Claims") pertaining to its business operations or the Collateral including, but not limited to, those arising from Lender's performance of Owner's obligations with respect to the Collateral or claims involving Hazardous Materials. Owner, upon the request of Lender, shall hire legal counsel to defend Lender from such Claims, and pay the attorneys' fees, legal expenses and other costs to the extent permitted by applicable law, incurred in connection therewith. In the alternative, Lender shall be entitled to employ its own legal counsel to defend such Claims at Owner's cost.

**17. TAXES AND ASSESSMENTS.** Owner shall execute and file all tax returns and pay all taxes, licenses, fees and assessments relating to its business operations and the Collateral (including, but not limited to, income taxes, personal property taxes, withholding taxes, sales taxes, use taxes, excise taxes and worker's compensation premiums) in a timely manner.

**18. INSPECTION OF COLLATERAL AND BOOKS AND RECORDS.** Owner shall allow Lender or its agents to examine, inspect and make abstracts and copies of the Collateral and Owner's books and records pertaining to Owner's business operations and financial condition or the Collateral during normal business hours. Owner shall provide any assistance required by Lender for these purposes. All of the signatures and information pertaining to the Collateral or contained in the books and records shall be genuine, true, accurate and complete in all respects. Owner shall note the existence of Lender's security interest in books and records pertaining to the Collateral.

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**19. EVENT OF DEFAULT.** An Event of Default shall occur under this Agreement in the event that Owner, Borrower or and guarantor of any of the Obligations:

- (a) fails to make any payment under this Agreement or any other indebtedness to Lender when due;
- (b) fails to perform any obligation or breaches any warranty or covenant to Lender contained in this Agreement or any other present or future written agreement regarding this or any other indebtedness to Lender;
- (c) provides or causes any false or misleading signature or representation to be provided to Lender;
- (d) sells, conveys, or transfers rights in any Collateral without the written approval of Lender; destroys, loses or damages such Collateral in any material respect; or subjects such Collateral to seizure, confiscation or condemnation;
- (e) seeks to revoke, terminate or otherwise limit its liability under any continuing guaranty;
- (f) has a garnishment, judgment, tax levy, attachment or lien entered or served against Owner, Borrower, or any guarantor, or any of their property including the Collateral;
- (g) dies, becomes legally incompetent, is dissolved or terminated, ceases to operate its business, becomes insolvent, makes an assignment for the benefit of creditors, fails to pay any debts as they become due, or becomes the subject of any bankruptcy, insolvency or debtor rehabilitation proceeding;
- (h) allows the Collateral to be used by anyone to transport or store goods, the possession, transportation, or use of which, is illegal;
- (i) fails to provide Lender evidence of satisfactory financial condition;
- (j) has a majority of its outstanding voting securities sold, conveyed, or transferred to any person or entity other than any person or entity that has the majority ownership as of the date of the execution of this agreement;
- (k) if Lender deems itself insecure in good faith with respect to any of the Obligation; or
- (l) is subject to an Event of Default under any agreement between Borrower and Lender, specifically including that Demand Promissory Note executed and dated as of even date hereof.

**20. RIGHTS OF LENDER ON EVENT OF DEFAULT.** If there is and Event of Default under this Agreement, Lender shall be entitled to exercise one or more of the following remedies without notice or demand (except as required by law):

- (a) to declare the Obligations due and payable in full; such acceleration shall be automatic and immediate if the Event of Default is a filing under the Bankruptcy Code;
- (b) to collect the outstanding Obligations with or without resorting to judicial process;
- (c) to change Owner's mailing address, open Owner's mail, and retain any instruments or other remittances constituting the Collateral contained therein;
- (d) to take possession of any Collateral in any manner permitted by law;
- (e) to apply for and obtain, without notice and upon ex parte application, the appointment of a receiver for the Collateral without regard to Owner's financial condition or solvency, the adequacy of the Collateral to secure the payment or performance of the obligations, or the existence of any waste to the Collateral;
- (f) to require Owner to deliver and make available to Lender any Collateral at a place reasonably convenient to Owner and Lender;
- (g) to sell, lease or otherwise dispose of any Collateral and collect any deficiency balance with or without resorting to legal process;
- (h) to set-off Owner's obligations against any amounts due to Owner including, but not limited to, monies, instruments, and deposit accounts maintained with Lender; and
- (i) to exercise all other rights available to Lender under any other applicable law.

Lender's rights are cumulative and may be exercised together, separately, and in any order. Unless the Collateral is perishable, threatens to decline speedily in value or is of a type customarily sold on a



recognized market, Lender will provide five (5) days notice of the time and place of any sale or intended disposition as required under the Uniform Commercial Code. If the Collateral consists of securities, Lender shall be entitled to transfer the securities into the name of Lender or its designee and to vote the securities. Lender shall be authorized to notify the issuer of the securities to remit any related dividends, interest, and securities resulting from stock splits, reorganizations, and capitalization's directly to Lender or its designee. In the event that Lender institutes an action to recover any Collateral or seek recovery of any Collateral by way of a prejudgment remedy in an action against Owner, Owner waives the posting of any bond which might otherwise be required. Upon default, Owner shall segregate all proceeds of Collateral and hold such proceeds in trust for Lender. Lender's remedies under this paragraph are in addition to those under any other written agreement or applicable law.

**21. APPLICATION OF PAYMENTS.** Whether or not a default has occurred under this Agreement, all payments made by or on behalf of Owner and all credits due to Owner from the disposition of the Collateral or otherwise may be applied against the amounts paid by Lender (including attorneys' fees and legal expenses) in connection with the exercise of its rights or remedies described in this Agreement and any interest thereon and then to the payment of the remaining Obligations in whatever order Lender chooses.

**22. REIMBURSEMENT OF AMOUNTS EXPENDED BY LENDER.** Owner shall reimburse Lender for all amounts (including attorneys' fees and legal expenses) expended by Lender in the performance of any action required to be taken by Owner or the exercise of any right or remedy belonging to Lender under this Agreement, together with interest thereon at the lower of the highest rate described in any promissory note or credit agreement executed by Borrower or Owner to Lender or the highest rate allowed by law from the date of payment until the date of reimbursement. These sums shall be included in the definition of Obligations, shall be secured by the Collateral identified in this Agreement and shall be payable upon demand. Lender has no duty to take and action to protect the value of the Collateral or to exercise any rights of the Owner with respect to the Collateral.

**23. ASSIGNMENT.** Owner shall not be entitled to assign any of its rights, remedies or obligations described in this Agreement without the prior written consent of Lender. Consent may be withheld by Lender in its sole discretion. Lender shall be entitled to assign any of its rights and remedies described in this Agreement without notice to or the prior written consent of Owner.

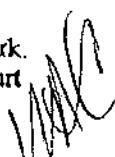
**24. MODIFICATION AND WAIVER.** The modification or waiver of any of Owner's obligations or Lender's rights under this Agreement must be contained in a writing signed by Lender. Lender may perform any of Owner's obligations or delay or fail to exercise any of its rights without causing a waiver of those obligations or rights. A waiver on one occasion shall not constitute a waiver on any other occasion. Owner's obligations under this Agreement shall not be affected if Lender amends, compromises, exchanges, fails to exercise, impairs or releases any of the obligations belonging to any Owner or third party or any of its rights against any Owner, third party, Collateral, or any other property securing the Obligations.

**25. SUCCESSORS AND ASSIGNS.** This Agreement shall be binding upon an inure to the benefit of Owner and Lender and their respective successors, assigns, trustees, receivers, administrators, heirs, personal representatives, legatees, and devisees.

**26. NOTICES.** Any notice or other communication to be provided under this Agreement shall be in writing and mailed to the parties at the addresses described in this Agreement or such other address as the parties may designate in writing from time to time.

**27. SEVERABILITY.** If any provision of this Agreement violates the law or is unenforceable, the rest of the Agreement shall remain valid.

**28. APPLICABLE LAW.** This Agreement shall be governed by the laws of the State of New York. Unless applicable law provides otherwise, Owner consents to the jurisdiction and venue of any court



located in the State of New York selected by Lender in the event of any legal proceeding under this Agreement.

**29. COLLECTION COSTS.** To the extent permitted by law, Owner agrees to pay all costs of collection and attorneys' fees in realizing on the Collateral.

**30. MISCELLANEOUS.** This Agreement is executed for commercial purposes. Owner shall supply information regarding Owner's business operations and financial condition or the Collateral in the form and manner as requested by Lender from time to time. All information furnished by Owner to Lender shall be true, accurate and complete in all respects. Owner and Lender agree that time is of the essence. Owner waives presentment, demand for payment, notice of dishonor and protest except as required by law. All references to Owner in this Agreement shall include all parties signing below. If there is more than one Owner, their obligations under this Agreement shall be joint and several. This Agreement shall remain in full force and effect until Lender provides Owner with written notice of termination. This Agreement represents the complete and integrated understanding between Owner and Lender regarding the terms hereof.

**31. WAIVER OF JURY TRIAL. LENDER AND OWNER HEREBY WAIVE ANY RIGHT TO A TRIAL BY JURY IN ANY CIVIL ACTION ARISING OUT OF, OR BASED UPON, THIS SECURITY AGREEMENT.**

**32. OWNER WAIVES ANY RIGHT TO REQUIRE LENDER TO PROCEED AGAINST BORROWER.**

**33. AUTHORITY.** Each person signing this Agreement warrants that he is authorized to execute this Agreement on behalf of the entity he purports to represent and bind hereby, either pursuant to the by-laws of such entity or pursuant to the resolution of the board of directors or other governing body of such entity.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement and the OWNER has affixed its seal, acting in their individual capacities or through their duly authorized agents or officers, as the case may be, as of this \_\_\_\_\_ day of May, 1999.

**SECURED PARTY:**

BALALLAN LIMITED

By: Patricia Bradley (SEAL)  
*Administrator*

**OWNER:**

GREEN OASIS ENVIRONMENTAL, INC.

By: William D. Carraway (SEAL) 5-26-99  
*William D. CARRAWAY*  
*PRESIDENT*

REMOVED

GUARANTY

STATE OF SOUTH CAROLINA

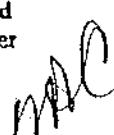
COUNTY OF CHARLESTON

May 25, 1999

In consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged by the undersigned, and to induce BALALLAN LIMITED, a New York corporation, with a principal place of business at 50 Broadway, Suite 2300, New York, New York 10004 (hereinafter collectively referred to as "Lender") to make loans or otherwise extend credit to Green Oasis Environmental, Inc. (hereinafter referred to as "Borrower") and/or to renew or extend in whole or in part any indebtedness of Borrower to Lender, or to make other financial accommodations to Borrower, which extension of loans and financial accommodations to Borrower will be of direct financial benefit to the undersigned, jointly and severally, do hereby unconditionally guarantee to Lender and to its endorsers, transferees, successors and assigns, of either this guaranty or any of the obligations secured hereby, the prompt payment and performance according to their terms of all obligations (as hereinafter defined) of Borrower to the Lender of any kind or character, and do agree that if such obligations, or any of them, are not performed or paid by the Borrower, the undersigned will immediately do so.

The undersigned hereby unconditionally and irrevocably guarantees to the Lender the full and punctual payment, when due, whether by acceleration or otherwise, of: (a) the unpaid principal balance of the indebtedness evidenced by all obligations (as hereinafter defined) as of the date of computation, plus (b) all accrued and unpaid interest thereon, plus (c) all expenses, costs, and charges permitted to be charged by the Lender to the Borrower pursuant to the terms of the Promissory Note dated May 25, 1999 between Borrower and Lender (the "Note") (the amounts described in clauses (a), (b), and (c) of this sentence being hereinafter referred to collectively as the "Indebtedness"). The term "Indebtedness" also includes any payments made by the Borrower to the Lender and subsequently recovered by the Borrower or a trustee for the Borrower or a trustee for the Borrower pursuant to the Borrower's bankruptcy or insolvency, subject to the limitations set forth in the preceding sentences of this paragraph. The guaranty of the undersigned as set forth in this section is an absolute, continuing, unconditional guaranty of payment and not of collection. This guaranty is absolute, unconditional and continuing, regardless of the validity, regularity, or enforceability of any of the obligations covered by this guaranty or the fact that a security interest or lien or any collateral or security therefor may not be enforceable by Lender or may otherwise be subject to equities or defenses or prior claims in favor of others or may be invalid or defective in any way and for any reason, including any action, or failure to act, on Lender's part. This guaranty shall remain in force and effect, whether or not Borrower changes its status, ownership, composition, personnel, name or location. Notwithstanding the foregoing provisions of this paragraph, the undersigned shall be fully liable to Lender for any fraud, misrepresentation, or misappropriation or misapplication of funds.

The obligations covered by this guaranty include all obligations of the Borrower to the Lender now existing or hereafter coming into existence, including but not limited to all obligations of Borrower to Lender arising under or pertaining to: any loan agreement, security agreement, instrument of lien, security deed or other security device, any promissory note, loans, advances, over-advances, and/or accounts; any and all other indebtedness and obligations of Borrower to Lender however evidenced or arising whether direct, indirect or by way of assignment, whether joint or several, absolute or contingent, or due or to become due; and any renewals, extensions, or modifications, in whole or in part of any of the obligations heretofore described, together with all damages, losses, costs, interest, charges, expenses and liabilities of every kind, nature and description suffered or incurred by the Lender, arising in any manner



out of or in any way connected with, or growing out of said obligations of the Borrower to the Lender. Lender shall not be liable for failure to collect obligations covered by this guaranty or to realize upon any collateral or security therefore, or any part thereof or for any delay in so doing, nor shall Lender be under any obligation to take any action whatsoever with regard thereto.

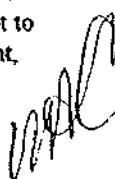
Nothing herein contained shall obligate Lender to grant credit to, or continue Lender's financing arrangements with Borrower. This guaranty may not be terminated so long as any obligations of Borrower to Lender are outstanding and unpaid. This guaranty shall be continuing, irrevocable and shall bind and inure to the benefit of the respective heirs, legal representatives, successors and assigns of Guarantor(s), and to Lender's successors and assigns. This Guaranty shall be revived and reinstated in the event that any payment received by Lender, or any of Lender's successors and assigns, endorsers or transferees, on any of the obligations, is required to be repaid or rescinded under present or future federal or state law or regulation relative to bankruptcy, insolvency, or other relief of debtors, to the same extent as if such payment had never been made, and the amount of such payment and interest thereon shall be part of the obligations guaranteed hereby.

This guaranty shall be effective regardless of the solvency or insolvency of Borrower, the dissolution of Borrower, the institution by or against Borrower of any proceeding under the Federal Bankruptcy Code, any reorganization, merger or consolidation of Borrower, or any change in the ownership, composition, or nature of Borrower.

In the event any proceeding is instituted by or against Borrower under the Federal Bankruptcy Code or any other bankruptcy, insolvency or moratorium law, as between the undersigned and Lender, all of the obligations shall be immediately due and payable, without notice and demand of any kind, and the undersigned agree immediately to pay the obligations in full, irrespective of whether the obligations can be accelerated against Borrower and irrespective of any right which Borrower may have under any bankruptcy, insolvency or moratorium law to cure defaults and reinstate the maturities of the obligations.

The undersigned hereby consent and agree that the Lender may at any time, either with or without consideration, surrender any property or other security of any kind or nature whatsoever held by it or by any person, firm or corporation in its behalf or for its account securing any of the obligations covered by this guaranty, or substitute any collateral so held by it for other collateral of like kind or of any kind without notice to or further consent from undersigned and such surrender or substitution shall not in any way affect the liability of the undersigned hereunder. The undersigned shall not be discharged from his, her, or their obligations and undertakings hereunder in the event the Lender releases or agrees not to sue any person against whom the undersigned has, to the knowledge of the Lender, a right of recourse or should the Lender agree to suspend the right to enforce the Note signed by the Borrower, or a guaranty given by any other person, or Lender's interest in the collateral given by Borrower to secure loans made by the Lender. Lender shall be under no duty to exercise all or any rights and remedies given by any note or agreement signed by Borrower, nor given by any other guaranty given to the Lender to secure Borrower's indebtedness to Lender, as a condition or requirement of enforcing this guaranty.

The undersigned waives notice of: the creation of any of the obligations, notice of nonpayment or default by Borrower under any of the obligations or under any agreement now or hereafter existing between Borrower and Lender, notice of presentment, demand, notice of dishonor, protest, notice of acceptance of this guaranty or the creation or extension or renewal of any obligation of the Borrower to which this guaranty relates; and any other notices whatever, and agrees that no modification of any of the obligations (including the release of any of the undersigned), or of any collateral security given by Borrower shall affect, impair or release the undersigned from any of the indebtedness then accrued or thereafter to accrue under this guaranty or any part hereof. In the event any claim hereunder is collected by law or through and attorney-at-law, the undersigned shall be liable to Lender for all costs of collection including reasonable attorney's fees. The undersigned hereby expressly waive, renounce and agree not to assert, any right, any claim or cause of action, including, without limitation, a claim for reimbursement, subrogation, indemnification or otherwise, against the Borrower arising out of or by reason of this



instrument or the obligations of the undersigned hereunder, including, without limitation, the payment or securing of purchasing of any of the obligations by the undersigned. The waiver, renunciation and agreement contained in the preceding sentence is for the benefit of Lender and also for the benefit of the Borrower, who may assert the benefits thereof as a third party beneficiary, and the undersigned may be released from such waiver, renunciation and agreement only by the execution and delivery, by the Lender and Borrower, of any instrument expressly releasing the undersigned therefrom.

The undersigned agrees that no act or omission on the part of the Lender shall in any way affect or impair this guaranty. The undersigned hereby waives the right to require the holder of the obligations guaranteed to take action against the principal. At the option of the Lender this may be treated as a guaranty or as a suretyship, with the right to proceed against the undersigned without first proceeding against the Borrower.

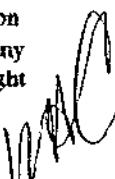
This guaranty is made subject to all the terms, conditions, agreements, or stipulations contained in the Note, agreements, instruments and other documents evidencing the obligations hereby guaranteed, which are hereby expressly incorporated herein, and the undersigned agrees that the terms, conditions and provisions of any Note, agreements, instruments or other documents which may be executed by the Borrower to evidence such obligations in the future shall simultaneously with their execution, become a part of this guaranty.

The liability of the undersigned shall not be modified in any manner whatsoever by any extension that may be granted to Borrower by any court in any proceeding under the Bankruptcy Act or any amendments thereof and the undersigned expressly waives the benefit of any such extension.

It is especially and expressly agreed if the indebtedness of said Borrower now or at any time hereafter exceeds the amount permitted by law, or said Borrower is not liable because the act of creating the obligation is ultra vires, or the officers creating same acted without authority, and for these reasons the indebtedness to Lender which the undersigned agreed to pay cannot be enforced against the Borrower, such facts shall in no manner affect the liability of the undersigned hereunder, notwithstanding said Borrower is not liable for such indebtedness, unto the same extent as the undersigned would have been liable if the indebtedness of the said Borrower had been enforceable against it.

It being the express intention of the parties hereto to conform strictly with the applicable usury laws, it is agreed that nothing contained herein shall be construed as to require the payment of interest at a rate in excess of the maximum allowable by law, and in no event shall the undersigned be obligated to pay interest exceeding such maximum rate of interest permitted by law, and all such agreements, conditions, or stipulations, if any, which may in any event or contingency whatsoever operate to bind, obligate, or compel the undersigned to pay a rate of interest exceeding the maximum rate of interest permitted by law shall be without binding force or effect at law or in equity only of the excess of interest over such maximum rate of interest permitted by law. It is the intention of the parties hereto that in the construction and interpretation of this guaranty, the foregoing sentence shall be given precedence over any other agreement, condition, or stipulation herein contained which is in conflict with the same.

No act of Lender's part and nothing other than the full payment, performance and discharge of all aforementioned indebtedness and obligations of Borrower shall operate or discharge or satisfy the liability of the undersigned hereunder. Lender's accounting records of any transactions with Borrower shall be admissible in evidence in any action or proceeding, and shall be binding upon the undersigned in establishing transactions and entries reflected therein, and shall be accepted as prima facie proof thereof. In the event any claim or action, or action on any judgment, based on this guaranty, is made or brought against the undersigned, the undersigned agree not to deduct any setoff or seek to counterclaim for or recoup, any amounts which are or may be owed by Lender to undersigned, or for any loss of contribution from any other guarantor. Furthermore, in any litigation based on this guaranty in which Lender and any of the undersigned shall be adverse parties, the undersigned hereby waive trial by jury and waive the right to interpose any defense based upon any statutes of Limitations or any claim of laches and waive the



performance of each and every condition precedent to which the undersigned might otherwise be entitled by law.

In the event of any breach, default under termination of any of the agreements between Lender and Borrower, or in the event that the undersigned shall fail to observe or perform any agreements, warranties, or covenants contained herein, or upon the death of any of the undersigned, or should any of the undersigned dissolve or cease its business, call a meeting of its creditors, fail to meet its debts as they mature, commit an act of bankruptcy, insolvency, arrangement, reorganization, receivership or similar proceeding under any federal or state law, then the liability of all of the undersigned for the entire obligations covered by this guaranty shall mature even if the liability of the Borrower therefore does not.

The undersigned and each of them waive and renounce each for himself and family any and all homestead of exemption right either of them may have under or by virtue of the constitution or laws of South Carolina, any other State, or the United States, against the liabilities and obligation hereby created, and do and do hereby jointly and severally transfer, convey and assign to the Lender or holder hereof a sufficient amount of any homestead or exemption that may be allowed to the undersigned, or of any of the, including such homestead or exemption that may be set apart in bankruptcy to pay this obligation in full, with all costs of collection, and each of the undersigned hereby directs the trustee in bankruptcy having possession of such homestead or exemption to deliver the Lender a sufficient amount of property to set apart as exempt to pay the obligation hereby created.

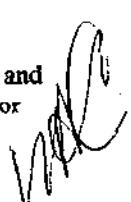
Where the obligation of Borrower hereby guaranteed is an obligation of a corporation, this guaranty is to cover all obligations to the Lender purporting to be made in behalf of Borrower by an officer or agent of Borrower without regard to the actual authority or such officer or agent. The term corporation or Borrower shall include associations of all kinds and all purported corporations whether correctly and legally chartered and organized or not. Where the undersigned is an natural person this agreement binds his heirs, administrators and executors, and where a corporation, its successors and assigns.

Where the obligation of Borrower hereby guaranteed is an obligation of an individual, such individual's undersigned spouse, if any, hereby unconditionally guarantees that the liability of the undersigned spouse shall be equal to the obligation of Borrower from time to time as hereinabove described. Such spouse hereby acknowledges and agrees that without said unconditional guarantee by the undersigned spouse, Lender would not have extended credit to Borrower, that Lender's extension of credit to Borrower is a direct economic benefit to said undersigned spouse and that the Lender's extension of credit to Borrower as set forth herein shall be good, valuable and sufficient consideration for such spouse's guarantee of Borrower's obligation of Lender hereunder.

The word "Lender" as herein used shall include transferees, assigns and successors of Lender, and all rights of Lender hereunder shall inure to the benefit of its transferees, successors and assigns.

The words importing the singular number hereunder shall include the plural number and vice versa and any pronouns used herein shall be deemed to cover all genders. Without limiting the generality of the foregoing, if more than one person executes this guaranty, the words "undersigned", "his", and "him" as used herein shall include all persons collectively and such each person individually, and all such persons shall be jointly and severally liable hereunder. "Person" as used herein means individual, corporation, partnership, joint venture, association, joint stock company, trusts, unincorporated associated, government or any agency or political subdivision thereof.

No termination hereof shall be effected by death of any or all if the undersigned. In the event of the death of any of the undersigned, his obligations hereunder shall continue in full force and effect against his estate to all indebtedness and obligations which shall have been created or incurred by Borrower prior to the time when Lender shall have actually received notice, in writing, of such death; and this guaranty shall, from the date of such death as to all indebtedness or obligations created, incurred or arising after such death remain in full force as a guaranty by the surviving undersigned.



Notwithstanding any provision in this Guaranty to the contrary, the aggregate dollar amount of the Guarantor's liability under this Guaranty shall be limited to the largest dollar amount which would render the obligations of the Guarantor hereunder subject to avoidance under Section 548 or any other section of the Federal Bankruptcy Code, or subject to being set aside under any applicable state fraudulent conveyance law.

This guaranty embodies the whole agreement of the parties and may not be modified except in writing, and no course of dealing between Lender and any of the undersigned shall be effective to change or modify this guaranty. Lender's failure to exercise any right hereunder shall not be construed as a waiver of the right to exercise the same or any other right at any other time and from time to time thereafter, and such rights shall be considered as cumulative rather than alternative. No knowledge of any breach or other nonobservance by any of the undersigned of the terms and provisions of this guaranty shall constitute a waiver thereof, nor a waiver of any obligations to be performed by the undersigned hereunder. The undersigned agrees that this guaranty shall be governed by and construed and enforced according to the laws of the State of New York. The undersigned hereby consent to the in personam jurisdiction of the courts of the State of New York. Wherever possible each provision of this guaranty shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this guaranty shall be prohibited by or invalid under applicable law, such provisions shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this guaranty.

IN WITNESS WHEREOF, the guarantor, intending to be legally bound hereby, as hereinabove described, has signed and sealed this guaranty, this \_\_\_\_\_ th day of May, 1999, at Charleston, South Carolina.

Witnessed:

Leslie Ann Johnson

By: William D. Carraway 5-26-99  
William D. Carraway (Individually)



ASSIGNMENT

WHEREAS, GREEN OASIS ENVIRONMENTAL, INC. ("Assignor") having made an invention for a "Process for Converting Waste Motor Oil to Diesel Fuel" for which a patent was issued by the United States Patent Office, Patent No. 5,885,444 on March 23, 1999 (the "Patent"); and

WHEREAS, Assignor has agreed to assign and transfer all right, title and interest in and to said invention and Patent to BALALLAN LIMITED ("Assignee"), a New York corporation having an office at 50 Broadway, Ste. 2300, New York, New York 10004 as collateral for the loan provided to Green Oasis Environmental, Inc pursuant to that certain Demand Promissory Note dated May 23, 1999;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and other good and valuable consideration paid by Assignee, the receipt and sufficiency of which are hereby acknowledged, I have sold, assigned, transferred and conveyed and by these presents do hereby sell, assign, transfer and convey unto Assignee in and for the United States and its territories and for foreign countries, the entire right, title and interest in and to the invention therein set forth, and in and to said Patent including any reissue, renewal, division, or continuation thereof, and I hereby bind myself, and any of our legal representatives, to execute without further consideration, any and all applications, petitions, oaths and assignments or other papers and instruments which may be necessary in order to carry into full force and effect the sale, assignment, transfer and conveyance hereby made or intended to be made;

The Assignor further agrees to execute and deliver promptly without further consideration any further applications, assignments and documents, and all pertinent facts relating to said application, said invention and said Patent, as may be known and accessible and will testify as to same in any interference or litigation related thereto, and to perform such other acts as lawfully as possible, that may be deemed necessary by said Assignee and its successors, assigns, and nominees, fully to secure its interest as aforesaid and to obtain or maintain Letters Patent in any and all countries;

The Assignor hereby covenants that no assignment, transfer, sale, agreement or encumbrance has or will be made or entered into which would conflict with this assignment and transfer;

The Assignor hereby authorizes and requests the Commissioner of Patents to reissue any and all Letters Patent, to Balallan Limited, the Assignee of the entire interest therein.



This Assignment is a continuing one and is irrevocable so long as any amount is due and owing to Assignee pursuant to that certain Demand Promissory Note dated May 25, 1999, which evidences the loan of one hundred thousand (\$100,000.00) dollars made to Assignor by Assignee (the "Note"). This Assignment shall terminate only upon payment or other satisfaction in full of all amounts due and owing under the terms and conditions of the Note and Assignee's acknowledgment in writing that this Assignment has been terminated. Upon termination of this Assignment, Assignee shall reassign all right, title and interest in and to the Patent to Assignor.

IN WITNESS WHEREOF, the Assignor has hereunto signed by his name on the day and year set forth below.

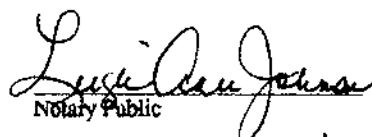
GREEN OASIS ENVIRONMENTAL, INC.

May 26, 1999  
Date

  
William D. Carraway, President

STATE OF SOUTH CAROLINA )  
                                  ) ss  
COUNTY OF CHARLESTON )

On this 26<sup>th</sup> day of May, 1999, before me, a notary public, came William D. Carraway, President of Green Oasis Environmental, Inc., to me known and known to be the individual described in and who executed the foregoing assignment, and he duly acknowledged the same to be his free act and deed.

  
Linda Johnson  
Notary Public

My Commission Expires: 3/17/2003

(SEAL)

US00588544A

## United States Patent [191]

Wansbrough et al.

[11] Patent Number: 5,885,444

[15] Date of Patent: Mar. 23, 1999

## [51] PROCESS FOR CONVERTING WASTE MOTOR OIL TO DIESEL FUEL.

[751] Inventors: Robert W. Wansbrough; Calvin E. Moore, Jr., both of Houston, Tex.; William D. Carraway, Pawleys Island, S.C.

[731] Assignee: Green Oasis Environmental, Inc., Charleston, S.C.

[21] Appl. No.: 809,000

[22] Filed: Mar. 3, 1997

## Related U.S. Application Data

[61] Continuation of Ser. No. 510,069, Sep. 19, 1995, abandoned, which is a continuation of Ser. No. 248,738, May 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 911,621, Nov. 17, 1992, abandoned.

[51] Int. Cl. 6 C10M 175/02; C10G 9/14

[52] U.S. Cl. 208/179; 208/67; 208/100; 208/131; 208/184; 208/106

[58] Field of Search 208/184, 67, 179, 208/97, 100, 131, 106

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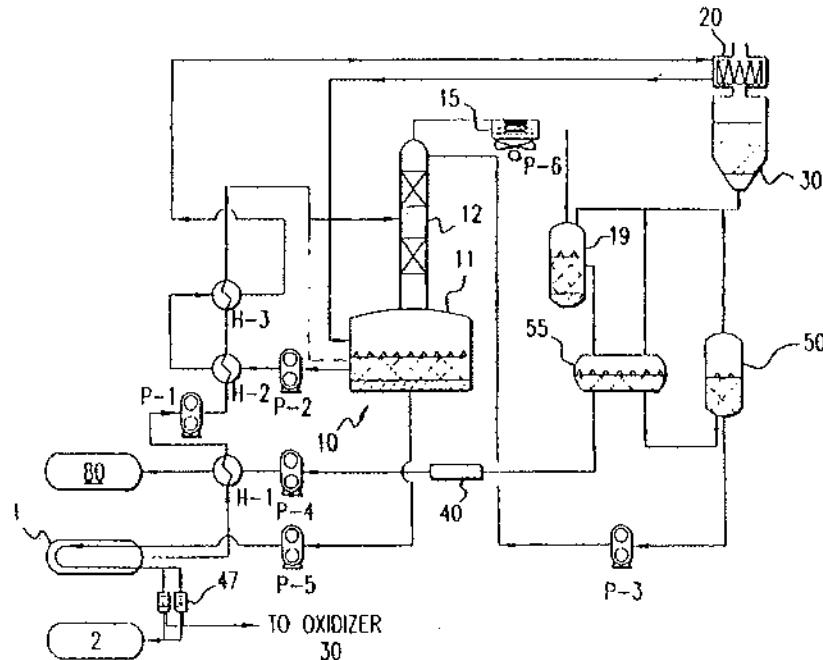
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Attorney, Agent, or Firm—Oliff & Berridge, PLC

## [57] ABSTRACT

A process for thermally cracking waste motor oil into a diesel fuel product is provided. The thermal cracking process uses low temperature cracking temperatures from 625° F. to 725° F. with ambient pressure to generate a column distilled fraction of diesel fuel mixed with light ends, the light ends being flashed off to produce a high quality #2 diesel fuel. The process further provides for removal from the cracking vessel an additional product stream which, when filtered, is suitable for use as a #3 fuel oil and that can be further blended with a bunker oil to yield a #5 fuel product.

## 16 Claims, 4 Drawing Sheets







## United States Patent and Trademark Office

[Home](#) | [Site Index](#) | [Search](#) | [Guides](#) | [Contacts](#) | [eBusiness](#) | [eBiz alerts](#) | [News](#) | [Help](#)[Assignments on the Web](#) > [Patent Query](#)**Patent Assignment Abstract of Title*****NOTE: Results display only for issued patents and published applications. For pending or abandoned applications please consult USPTO staff.*****Total Assignments: 5****Patent #:** 5885444      **Issue Dt:** 03/23/1999      **Application #:** 08809000      **Filing Dt:** 03/03/1997**Inventors:** ROBERT W. WANSBROUGH, CALVIN E. MOORE, WILLIAM D. CARRAWAY**Title:** PROCESS FOR CONVERTING WASTE MOTOR OIL TO DIESEL FUEL**Assignment: 1****Reel/Frame:** 009637/0117      **Recorded:** 12/14/1998      **Pages:** 2**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).**Assignor:** CARRAWAY, WILLIAM D.      **Exec Dt:** 12/08/1998**Assignee:** GREEN OASIS ENVIRONMENTAL, INC.184 EAST BAY STREET, SUITE 302  
CHARLESTON, SOUTH CAROLINA 29401**Correspondent:** OLIFF & BERRIDGE, PLCWILLIAM P. BERRIDGE  
P.O. BOX 19928  
ALEXANDRIA, VA 22320**Assignment: 2****Reel/Frame:** 009637/0115      **Recorded:** 12/14/1998      **Pages:** 2**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).**Assignor:** WANSBROUGH, ROBERT W.      **Exec Dt:** 12/11/1998**Assignee:** GREEN OASIS ENVIRONMENTAL, INC.  
SUITE 302  
184 EAST BAY STREET  
CHARLESTON, SOUTH CAROLINA 29401**Correspondent:** OLIFF & BERRIDGE, PLCWILLIAM P. BERRIDGE  
P.O. BOX 19928  
ALEXANDRIA, VA 22320**Assignment: 3****Reel/Frame:** 009901/0778      **Recorded:** 04/22/1999      **Pages:** 2**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).**Assignor:** MOORE, CALVIN E., JR.      **Exec Dt:** 04/15/1999**Assignee:** GREEN OASIS ENVIRONMENTAL, INC.  
184 EAST BAY STREET, SUITE 302  
CHARLESTON, SOUTH CAROLINA 29401**Correspondent:** OLIFF & BERRIDGE, PLCWILLIAM P. BERRIDGE  
P.O. BOX 19928  
ALEXANDRIA, VA 22320**Assignment: 4**

**Reel/Frame:** 010247/0993**Recorded:** 09/14/1999**Pages:** 3**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).**Assignor:** GREEN OASIS ENVIRONMENTAL, INC.**Exec Dt:** 05/26/1999**Assignee:** BALALLAN LIMITED50 BROADWAY, SUITE 2300  
NEW YORK, NEW YORK 10004**Correspondent:** BRISKIN & RINDE, L.C.JEFFREY A. RINDE  
1001 CAMBRIDGE SQUARE, SUITE D  
ALPHARETTA, GA 30004**Assignment: 5****Reel/Frame:** 017921/0520**Recorded:** 07/11/2006**Pages:** 17**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).**Assignor:** GREEN OASIS ENVIRONMENTAL, INC.**Exec Dt:** 07/07/2006**Assignee:** BALALLAN LIMITED32-72 37TH STREET  
ASTORIA, NEW YORK 11103**Correspondent:** MARK MONTAGUECOWAN, LIEBOWITZ & LATMAN, P.C.  
1133 AVENUE OF AMERICAS  
NEW YORK, NY 10036

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**AMENDED & RESTATED**  
**DEMAND PROMISSORY NOTE #1**

*(replaces the Amended and Restated Demand Promissory Note  
dated May 25, 1999, in the amount of \$100,000)*

\$500,000.00

Charleston, South Carolina  
June 4, 1999

**FOR VALUE RECEIVED**, the undersigned (herein referred to as "Maker") promises to pay on demand to the order of BALALLAN LIMITED (herein referred to as "Payee") at its offices at 50 Broadway, Ste. 2300, New York, New York 10004, or at such other place as the holder hereof may designate, the principal sum of Five Hundred Thousand Dollars (\$500,000.00), or so much of the principal balance of this Note as may be outstanding and unpaid from time to time, plus interest at the rate per annum of Ten (10%) percent.

**Maker covenants and agrees with Payee the following:**

1. Maker will pay the indebtedness evidenced by this Note as provided herein.
2. Payment shall be delivered to Balallan Limited, 50 Broadway, Ste. 2300, New York, New York 10004 or such other address as Payee shall designate in writing.
3. Unless demand for payment is earlier made, all accrued interest plus any outstanding principal balance shall be due and payable on December 2, 1999.
4. This Note is secured by a Security Agreement and other related agreements between the undersigned each dated May 25, 1999 (the "Transaction Documents"), pursuant to which this Demand Promissory Note was made and delivered to Payee for which this Amended and Restated Promissory Note modifies and replaces but in no way is to be construed as novation to the indebtedness thereto. All of the terms, covenants and conditions, contained in the Transaction Documents are expressly incorporated by reference herein and hereby made a part hereof. Any act of default by the undersigned under any of the Transaction Documents shall constitute a default under this Note.
5. Repayment of this Note is guaranteed by William D. Carraway. All of the terms, covenants and conditions, contained in the Guaranty attached hereto are expressly incorporated by reference herein and hereby made a part hereof.
6. In the event any payment due hereunder shall not be paid on the date when due, such payment shall bear interest at the lesser of eighteen (18%) percent per annum or the highest lawful rate permitted under applicable law, from the date when such payment was due until paid. This paragraph shall not be deemed to extend or otherwise modify or amend the date when such payments are due hereunder. The obligations of Maker under this Note are subject to the limitation that payments of interest shall not be required to the extent that the charging of or the receipt of any such payment by Payee would be contrary to the provisions of law applicable to Payee limiting the maximum rate of interest which may be charged or collected by Payee.
7. If any proceedings be instituted by or against Maker alleging that Maker is insolvent, unable to pay its debts as they mature, or not generally paying its debts as such debts become due; or if proceedings be instituted by or against Maker under the Federal Bankruptcy Code or any successor statute; or if any proceeding be instituted seeking the appointment of a receiver or trustee for all or any portion of Debtor's property; or if any proceeding affecting the rights of creditors generally be instituted by or against Maker, this Note without demand or notice of any kind, immediately shall become due and payable. This paragraph is in addition to and in no way is a limitation upon the other rights of Payee under this Note, any other instrument, or any of the Transaction Documents between Payee and Maker, or applicable law.

8. In case this Note is collected by or through an attorney-at-law, all costs of collection, including reasonable attorney's fees shall be paid by Maker.

9. Maker, and all guarantors, endorsers and sureties of this Note, hereby waive presentment for payment, demand, protest, notice of protest, notice of nonpayment, and notice of dishonor of this Note. Maker and all guarantors, endorsers and sureties consent that the holder of this Note at any time may extend the time of payment of all or any part of the indebtedness secured hereby, or may grant any other indulgences.

10. This Note may not be changed or terminated orally, but only an agreement in writing signed by the party against whom enforcement of any change, modification, termination, waiver, or discharge is sought. This Note shall be construed and enforced in accordance with the laws of New York. The undersigned hereby consents to the in personam jurisdiction of the courts of the State of New York. Wherever possible each provision of this Note shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Note shall be prohibited by or invalid under applicable law, such provisions shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this guaranty.

**IN WITNESS WHEREOF** Maker has caused this Amended and Restated Demand Promissory Note to be duly executed and its seal affixed by its duly authorized officers, and has delivered this Note to Payee, on the date first above written.

GREEN OASIS ENVIRONMENTAL, INC.  
with a principal place of business at  
184 E. Bay Street, Ste. 302  
Charleston, S.C. 29401

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By: William D. Carraway, President  
Title:

Attest:

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\_\_\_\_\_, Secretary

(Corporate Seal)

TO

THE DEMAND PROMISSORY NOTE, SECURITY AGREEMENT, AND RELATED  
FINANCING DOCUMENTS DATED MAY 25, 1999 BETWEEN BALALLAN LIMITED  
(HEREIN REFERRED TO AS "SECURED PARTY") AND GREEN OASIS  
ENVIRONMENTAL, INC. (HEREIN REFERRED TO AS "DEBTOR")

For and in consideration of the premises, the mutual agreements, warranties and representations herein made, and other and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Debtor and Secured Party agree that the Demand Promissory Note, Security Agreement and all related transaction documents, including the Guaranty of William D. Carraway, the Assignment of Patent, and Assignment of Claim for Damages, executed between Debtor and Secured Party dated May 25, 1999 (collectively referred to hereinafter as the "Transaction Documents"), are herein amended as follows:

1. Capitalized terms used herein and not otherwise defined herein shall have the meanings given to such terms in the Transaction Documents.
2. The Demand Promissory Note dated May 25, 1999 shall hereby be amended and restated in its entirety by the Amended and Restated Promissory Note #1 in the amount of \$500,000. From and after the date hereof, the Demand Promissory Note shall be deemed to mean the Amended and Restated Demand Promissory Note #1 as same may be amended, modified or restated from time to time and the Security Agreement shall be deemed to mean the Security Agreement, as amended, modified or restated from time to time hereafter.
3. Except as expressly amended hereinabove, each condition, provision, covenant and term contained in the Transaction Documents shall remain in full force and effect, and the Debtor hereby ratifies, confirms, adopts and approves the Transaction Documents as they exist and agrees that it shall continue to be bound by all of the conditions, provisions, terms and covenants contained in said Transaction Documents and nothing contained therein shall be deemed to have been modified, abrogated, superseded or otherwise affected except as specifically set forth herein.
4. This Amendment represents a modification only and is not, and should not be construed as a novation.

ACCEPTED THIS \_\_\_\_ DAY OF JUNE, 1999.

ATTEST:

DEBTOR:

GREEN OASIS ENVIRONMENTAL, INC.

By:

William D. Carraway, President

\_\_\_\_\_, Secretary

The undersigned Guarantor of all indebtedness at any time owing by Green Oasis Environmental, Inc. to Balallan Limited hereby acknowledges and consents to the foregoing and affirms that nothing contained therein shall modify in any respect such guaranty.

Witness:

\_\_\_\_\_  
William D. Carraway, Guarantor